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ABSTRACT

The proceedings of this workshop contain 18 papers on various aspects of graduate education. Some discuss its general features while others are concerned with more specific issues in this area: administration, teaching, training college teachers, degree programs, federal support, admissions, student financial assistance, student role, disadvantaged students, and graduate work in the natural sciences, social sciences, humanities, and practitioner-oriented fields. A summary of the workshop discussions, a bibliography of 185 items, tables, and listings of contributors and participants are also included. The authors of the papers were: Gustave Arlt, Robert Henle, S.J., John Folger, John Morse, Robert Kinsman, Frank Koen, Charles Falk, Preston Valien, Sanford Elberg, Milton Muelder, Robert McDermott, J. Boyd Page, John Landgraf, J. Peterson Elder, Joseph L. McCarthy, Philip Altbach, and David Sanchez, Jr. The document is available from The Council of Graduate Schools in the U.S., One Dupont Circle, Washington, D.C. 20036 ($2.00) (DS)

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PROCEEDINGS OF THE 1969 SUMMER WORKSHOP FOR GRADUATE DEANS

July 6-11, 1969
Lake Arrowhead, California

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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The Council of Graduate Schools in the United States
1785 Massachusetts Avenue, N. W.
Washington, D. C. 20036

PREFACE

The second Summer Workshop for Graduate Deans, sponsored and supported by the Council of Graduate Schools in the United States, was held from July 6 to 11, 1969, at the University of California Conference Center in the attractive mountain setting of Lake Arrowhead, California. Cooperating in its sponsorship were the California Institute of Technology, the Claremont Graduate School and University Center, the University of Southern California, and the University of California, Los Angeles.

The Workshop program was arranged by a Planning Committee which included, first and foremost, Gustave O. Arlt, President of the Council of Graduate Schools and Robert E. McDermott, of the Pennsylvania State University, both of whom contributed freely of their insights and experience gained at the first Summer Workshop at Penn State in 1968. They were joined by the regional graduate deans, H. Frederic Bohnenblust of the California Institute of Technology, Robert S. Kinsman, who additionally had participated in the first Workshop, and myself, of UCLA, Charles G. Mayo of the University of Southern California, and Philip M. Rice of the Claremont Graduate School and University Center. Until his tragic terminal illness, Warren C. Scoville of UCLA had also participated actively and had agreed to serve as a discussion leader.

With the pattern of the first Workshop as a guide, the Committee was able to recruit an outstandingly talented series of speakers for morning and evening presentations, and of leaders for afternoon discussion. The forty Workshop participants, from institutions in all parts of the country, proved a remarkably stimulating and congenial group, that was enriched through the week by members of the Executive and Costs-Study Committees of the CGS, who were meeting at Lake Arrowhead concurrently. All appreciated the superb competence of Mrs. Ruth Weeks, Workshop Coordinator, and the many contributions of her staff and that of the Center to everyone's well-being. Both the setting and the weather were beautiful and a range of recreational facilities was thoroughly enjoyed. In short, the Workshop provided a most pleasant and memorable experience for all involved.

The Proceedings which follow collate the presentations and summarize the discussions around major topics of concern. Comments and letters following the Workshop have pointed out how outstanding and stimulating these contributions were. Their published assembly, for which again Mrs. Weeks has been responsible, will provide pleasant recollections to those in attendance and bring something of the flavor and value of the Workshop to a wider group who we wish might have been able to attend.

All of us who cooperated in the sponsorship of the Workshop are deeply appreciative of the opportunity to have been involved.

H. W. MAGOUN
For the Committee

October 1969

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GRADUATE EDUCATION TODAY

President Gustave O. Arlt
Council of Graduate Schools in the United States

As I look over the voluminous and still-growing shelf of loose-leaf binders in which my writings and speakings of the past ten years have been and are still being assembled, I find that the topic assigned to me today runs like a Leitmotif--an ever recurring theme--through volume after volume. To continue the musical metaphor, I might say it appears in a series of variations and modulations--Graduate Education Today, New Developments in Graduate Education, Today's Expanding Graduate School --but the central theme always remains the same from year to year. Naturally, I leafed through volume after volume in the hope that I might find some little piece that I could warm over or refurbish with up-to-date statistics and use for this occasion. I might have saved myself the time and trouble. Ten years ago, five years ago, one could review with satisfaction the ever-rising enrollments and the astronomic contributions of the Federal government, the states, the foundations, and private donors. One could point with pride to the unparalleled progress in the sciences with perhaps a condescending nod in the direction of the arts and humanities. In a brief paragraph one could view with alarm the overemphasis on research and the resultant neglect of teaching, but one dismissed it indulgently as an error that would correct itself in time. And one could conclude this panegyric with the confident assurance that God's in His heaven, all's right with the world of graduate education.

That was yesterday. That was a period of prosperity and euphoria and complacency. We saw established universities reach new plateaus of quality and prestige. We saw new institutions flourish phenomenally and at the same time try to moderate their expansion with efforts to attain the standards of excellence set by their elders. We saw a succession of far-seeing and sympathetic Federal administrations develop new educational programs and provide support for them at levels unprecedented and unparalleled anywhere at any time. Private and corporate benefactions reached new heights. And for the first time in American history, the universities and the academic profession achieved a measure of respectability and respect in a materialistic society. Graduate education was everyone's fair-haired child.

But now the end of our short-lived golden era is in sight. Federal funds are drying up faster than they began to flow. Foundations that provided supplementary support are fighting for their existence. State legislatures have made cuts in their appropriations to public universities and colleges, and many have enacted restrictive legislation to withhold funds from both public and private institutions that do not maintain order on their campuses. The education associations based in Washington are locked in battle with the Congress over a whole spate of bills providing all sorts of punitive measures against students, faculties, and institutions as a whole, and right now we seem to be on the losing side. The outlook for students for this fall is bleak as the II-S deferments for those already

I want to share Dr. Seitz's questions with you because I believe them to be not only relevant but actually central to practically all the topics that you are going to discuss here:

> Has the surge in the number of advanced degrees granted during this decade established a sound basis for continuation in the future? Is it leading to an oversupply of people with specialized research expectations? Has it occurred at the price of a decrease in quality?
>
> If the present trend is sound, where will funds come from to sustain continued growth of graduate education and to support research by Ph.D. recipients in the future? By what mechanisms should such funds be injected into the educational system? How can the productivity of graduate education be increased?
>
> If the present trend harbors dangers, what changes in the characteristics of degree programs, selectivity in graduate admission, or requirements for degrees are indicated?
>
> What changes are needed to meet the criticisms of employers that present doctoral programs inculcate rigid attitudes toward research specialization? Will present degree programs adequately meet the need for teachers in two-year and four-year colleges? What changes in graduate education are indicated by the attitudes of graduate students toward their degree programs?
>
> What types, patterns, and mixtures of graduate programs and degrees will be needed for the future, considering the role of the traditional research-based Ph.D., masters' and intermediate degrees, non-research-based doctorates, and specialty and interdisciplinary doctorates?
>
> How can workable programs be devised for the disadvantaged graduate student without jeopardizing standards?
>
> What effect will social, political, and economic developments, such as the draft, student unrest and dissatisfaction, protests, and reaction, have upon graduate education?
>
> How can quality in graduate education be maintained or strengthened, considering the growth in the numbers of graduate students and of graduate institutions?
>
> Are imbalances developing among fields in the granting of doctoral degrees in view of anticipated manpower needs?

There can be little doubt that the concern of the National Academy of Sciences about some of the trends in graduate education and their implications for the future is justified. And there is certainly no doubt that this concern is shared by others, many others--by employers, public and private, by university and college administrators, by legislators, by the informed lay public. The only sector of the academic community into which this concern has perhaps not deeply penetrated is the faculty, many of whom seem to be quite content with graduate education as it was, is, and they hope, evermore shall be--.

At any rate, by this time you will have discerned that I really had no intention to soothe you with an euphoric account of all the good and constructive things that are going on in many graduate schools--new interdisciplinary programs, new approaches to conventional subjects, more rational selection of students, better guidance and supervision. All this we note not so much with satisfaction--because it is not enough--but at least with approval. The most apparent characteristic of graduate education today--and this we note with both approval and satisfaction--is its awakened concern with its functions, its philosophy, and with its procedures in relation to the realities of a world in which it had become obsolete. Graduate education today is at least and at last asking the right questions and with some of them you will deal here. And graduate education today is searching for the answers that must be given and given soon.

THE PLACE OF THE GRADUATE SCHOOL IN THE STRUCTURE OF THE UNIVERSITY

Rev. R. J. Henle, S. J.
President, Georgetown University

The approach which I intend to take to this problem may seem to many of you very trite and old hat because I intend to ask some very simple and fundamental questions in attempting to reach some very simple and general answers. I have a conviction that in so much of our discussion we move away too rapidly from the fundamental issues and begin to talk about practical complexities or highly elaborated abstract considerations. I think that in all complex problems we should constantly come back to and reflect on the few fundamentals involved.

Consequently, I am not going to approach this by talking directly about the structure of the university and so gradually closing in on the graduate dean. On the contrary, I intend to look at the graduate dean and ask the first and most basic question about him. I ask: "Why should a graduate dean exist at all?" After all, perhaps both the structure and the operation of the university would be simplified or even improved if we eliminated graduate deans.

Why is there a graduate school or a graduate division? Why does the Council of Graduate Schools, for example, regard the existence of a distinct graduate administration as essential to genuine graduate work? Why do we generally establish a single graduate school for all disciplines and professions (or, at least, not more than several graduate schools), independent of both the undergraduate and the professional schools?

Is there, for example, any validity in assigning the Master of Science in Dentistry degree to the graduate school, while leaving the Post-Graduate Certificate under the jurisdiction of the professional dean and his school?

Can these administrative divisions be explained as simply a convenient division of labor? Have we perhaps created the graduate division in order to alleviate the growing burden on undergraduate and professional deans? Actually, we have found many ways to take care of an expanding amount and variety of academic and technical programs and burdens. We supply deans, for example, with associate deans, assistant deans, assistants to the dean, directors of freshman programs, and so forth. A simple division of labor does not seem to justify the elaborate restructuring and the sharp divisions required for the establishment of a graduate school. Moreover, if we were simply to look to the simplest organization, it would seem to be much more efficient to leave all programs for concentration in, for example, English to a single dean, rather than to cut the vertical, unified, departmental structure of all disciplines by the horizontal break between undergraduate and graduate programs.

Or, could we argue that we have set up the graduate deanship with a view to simplifying administration or to rounding out the bureaucracy of the university? I expect, on the contrary, that our discussions here and your experiences either in the past or in the future will convince you that the graduate dean is indeed a kind of administrative maverick, a constant irritant to vice presidents, deans, chairmen, and budget committees. It would seem that there must be some very compelling reasons to justify asking the university community to put up with the graduate dean. Like the traditional tough lawman of the trail-end town, he must have some uniquely important function even though this function is less than popular with the various constituencies and makes of him an unpopular loner. Indeed, it is true that the graduate dean often does fight a lone battle. In most complex universities there is a group of undergraduate deans to stand together in a common front. There is usually a group of professional deans, although in my experience, the medical dean is frequently enough, all by himself, terrible as an army in battle array. There is, of course, a pride of vice presidents and a positive herd of thundering financial officers. Generally, there is only one lonely graduate dean.

Is the difference perhaps a quantitative one? Is there a point in the consumption of knowledge in any discipline--Anthropology, Electrical Engineering, Swahili, or whatever--where a differently minded administrator is needed? Is it the case that the undergraduate dean can see the student so far along the path of Philosophy or Ceramics and then must turn him over to the greater wisdom of the graduate dean? Is graduate education simply more of the same but at an advanced level? Is the difference something like that between knowing 200 Chinese ideograms and knowing 1,000?

There seems no reasonable argument why more or less of knowledge should create a need for independent and different administrations.

Well, we have eliminated quantitative considerations, the convenience in handling increased burdens, administrative simplicity, and we still have no answer to the question of what justifies the existence of the graduate school. Let us reflect for a moment that we are talking about the existence of an educational administrator in an educational unit. The graduate school is not an institute for research. It is not, as it sometimes is referred to, a research factory. It is not an organization for supplying faculty with technicians. It is an educational unit of the university looking to the education of students.

If such a unit is to be justified, it seems to me that it can be justified only on the basis of a qualitative educational difference. Educational structure, after all, ought to be dictated by educational purpose and orientation.

The educational units of the university can indeed be specified by their educational purpose. For example, the undergraduate college aims primarily at the general and basic development of the student. However much it may prepare for graduate school or train for a technical field, it is concerned basically with the balanced growth of the student, not with the production of the learned scholar or of any particular professional type of person. It is perhaps less easy to justify the undergraduate professional school. Nonetheless, it does combine, in a single program centered on the student, preparation for a technical career with general personal development. Even here, there is often tension between the technical people in the program, the engineers, for example, and that part of the program which is liberal or humanistic or, at least, more general. The advanced professional school can easily be specified as aiming at producing the physician, the dentist, the social worker, and so forth.

What now happens when one goes on from the undergraduate school to study Philosophy or Chemistry or German, or on from the undergraduate professional school to study Electrical Engineering or Chemical Engineering, or on from the medical or dental schools to study Physiology or Oral Pathology? How does it happen that these vastly different disciplines, skills, and knowledges, which at the undergraduate level are organized into quite different schools, nonetheless come to a common focus in a common administrative framework in the graduate school?

It is quite clear from the above that it is no single discipline or even groups of disciplines which specify the graduate school. What we must find is a new factor or common denominator. If we were to ask most educators what it is that can be identified within the total graduate enterprise, roughly, of course, and only in a very general way, as being a new dimension or a new emphasis, I think most people would point to the "research" component--that magic, mystical word, perhaps also mythical.

If we accept this as a basic clue and recall once again that we are dealing with an educational program and an educational unit, we can then rightly and immediately ask: "What is the specific, educational and intellectual value of research?" I would take the position that research, if it is more than merely technical problem-solving according to the defined rules of the discipline, is learning by personal experience how knowledge within a discipline is created. It is not merely, to take Chemistry for an example, the enlargement of chemical fact or the learning of chemical principles and theories. Research viewed as an authentic mode of intellectual discovery requires and forces a person to learn what a chemical fact as such is, how chemical facts are distinguished and discovered, and how chemical principles are developed. From the standpoint of education, the research experience of the graduate school is seen to give him a reflective understanding of and a creative mastery of his discipline--and so, adds a new dimension to all his previous work. Everything that he has learned about his discipline should now appear to him in a new light, in the light of the way of discovery. Theoretically, the ideal learning process would be to so establish the strategy of education that a person would rediscover and recreate the whole of his discipline. It is the discoverer who really understands. It is said that Pascal at the age of 13 or 14 worked out and rediscovered Euclidean geometry for himself. There surely would be no better intellectual way to learn geometry. This precisely was the way of discovery, of research. Now, since the graduate dean has a responsibility for the graduate educational program, it certainly should be his concern that the research experience of the graduate student really achieves this. I would say that he is the only officer of the university who can address himself to this concern without qualification or conflict of interest. From the standpoint of the graduate dean, the graduate school is not a research institute. Its primary function is not in the production of research, but in the production of learned scholars.

The individual professor does and should develop an absorbing interest in his own research program or in completing promptly and adequately his project under a research grant or contract. I think we would all agree that sometimes this interest is the dominant one, and it certainly can conflict with the educational needs of the graduate student. The term, "research", covers a multitude of sins and not everything that is called research achieves the educational goal that I have briefly described here. Much humdrum research goes on that is pretty routine and has little educational bearing. The graduate student may actually be given for his dissertation a small piece of the professor's or the grantee's research project. He may have little to do with the research design. In fact, he may be given a small technical task within the total project which is little more than problem-solving according to predetermined rules. This activity may be of great assistance to the professor, but it may also give only the minimal result in educational development for the student.

What I have said of the professor is likewise to some extent true of the departmental chairman. He, too, is anxious to promote grants and contracts, to get research done, to encourage publication and to provide every possible assistance to his faculty members so that they will "produce." Moreover, he is under different pressures to achieve many different goals to satisfy many different programs and objectives. The graduate dean's function is to try to insure that the research experience of the graduate student is designed not primarily to promote a professor's research or to complete a research project, but to give the student himself the best educational result.

In passing, let me note that, from this standpoint, it makes no difference whether the graduate student ever produces research again. The research component of the graduate program is not primarily designed to produce professional researchers but to produce a learned scholar. Consequently, I consider all the attacks on the research component based on statistics of non-productivity of Ph.D. graduates to be invalid, to rest on a misconception of the function of research in graduate education. I repeat: Its primary function is to produce the master of a discipline and a learned scholar but not primarily a professional researcher. Obviously, however, the kind of education I am talking about is, of course, an absolute prerequisite to becoming a researcher in the full sense.

I am going on to another point. Generally, in talking about a graduate program, there is a sharp distinction made between the courses that constitute the program, together with those examinations that certify the general educational results of such courses, and the research activity itself. But I would maintain that the research component viewed educationally does not differ radically from the course work within a graduate program. I am excluding from the consideration which I am here making what I would call supporting courses. Graduate students at all levels take courses to develop necessary skills and so forth. For example, a student might take a course in Medieval Latin in order to be able to read the original historical documents for his research. Another student might take a course in Computer Programming in order to achieve a skill necessary for his particular discipline. I am not talking about these courses which in many ways do not differ at all from undergraduate courses or from courses that develop technical skill. The courses I am addressing myself to now are those which constitute the heart of the graduate program. It is my contention that these courses should be taught in such a way that they, too, effect a reflective understanding and a creative mastery of the discipline and not merely give a quantitative expansion of knowledge or a new technical skill. I am, in other words, taking the intellectual mode of discovery as being the mark of the genuine graduate approach to any body of knowledge. And so, I would take this also to be the distinguishing characteristic of a true "Graduate" course.

Anyone who has seen a faculty group attempting after years of undergraduate teaching to move into a graduate program knows how difficult it is to get them to shift the manner of teaching and the intellectual mode of presenting their discipline. I am sure many of you have had this experience which I have had and in studying the developments, I sometimes thought despairingly that, to some of the faculty members involved, the only difference between an undergraduate course and the graduate course was the catalogue numbers assigned to them. Some of them seemed to think that by giving a graduate number to a course that they had been teaching to undergraduates would suddenly transform it into a graduate course. People argue that a course is graduate if it is harder; if it is more work; if it is more "advanced" knowledge. You can make a very hard course out of a post-graduate expansion of previous knowledge. You can build on previous knowledge and so give a quantitative expansion into the advanced area. None of this, in my opinion, is relevant. What is relevant is the intellectual mode in dealing with the knowledge and it is this that counts when you are trying to distinguish what the genuinely graduate level course is.

In this regard again, I would argue that the graduate dean has a distinctive function. He is the only one who ex-officio can challenge the graduate character of the courses and the graduate character of the teaching in the graduate program.

Professors, despite previous graduate work, and perhaps because of years of undergraduate teaching, sometimes have only a vague notion of graduate education. Chairmen, again, are pulled in many different directions. They are concerned with many conflicting pressures. The graduate dean should constitute the countervailing pressure in support of the distinctive graduate mode of teaching.

As I said in the beginning, I do not intend to talk about specific models or organization or structure. I have tried to identify in a rather simplified manner what I consider to be the basic, distinctive characteristic of the graduate level of education--the primary justification for the existence of a separate administration and a separate responsible administrative officer. In practice, the situation is much more complex. There are many questions to be asked with regard, for example, to the way the wide variety and sometimes questionable types of Masters Programs are to be squared with the theoretical position here outlined. Whatever the organization of the university, it should be such to enable the graduate dean, or whatever the responsible academic official is called, to exercise an influence or authority that is commensurate with his responsibility, that will enable him to carry out the functions which I have very briefly described above.

I believe that university organization and structure within the next ten years is going to change. There may be radically new models of collegiate and university organization. Whatever does happen, the person responsible for this particular level of education--I don't regard the type of learning I here described as being so conditioned or ephemeral that it may radically change or disappear--must be provided with the means necessary to carry out his responsibilities.

I will now briefly outline what I think some of these necessary provisions are, without indicating what kind of a structure is necessary to achieve it. It seems to me that the graduate dean, to use his ordinary title, must be involved in the hiring of faculty. He certainly should be able to exercise authority with regard to the authorization of faculty, not only to direct dissertations but to teach graduate level courses. He should be able to establish an evaluation of the graduate programs and to make this evaluation effective in matters of assignment of faculty, promotion of faculty, and faculty salaries. All of this, I think, makes it imperative that in some fashion he be involved in the budgetary process. To give a single example of the problem involved, the equipment budget of a department can easily be so slanted that the graduate students and the graduate program itself can be at a definite disadvantage. I have seen some departmental budgets in which the equipment budget is completely absorbed in supplying each individual professor with the specific equipment he desires for his personal use. This left no provision for the general requirements of the graduate program and for general graduate research.

If organizational models can be worked out which will guarantee the adequate recognition of these needs of the responsible graduate administrator, then graduate education in our universities will be adequately protected and promoted. In my opinion, the graduate dean can be one of the most effective and important leaders for maintaining the intellectual integrity of the university. We have often said in the past that the graduate dean has had a tremendous responsibility but very little influence, that he had to achieve his goal mainly by diplomacy and chicanery. Hopefully, we can find a structure in which his responsibilities can be carried out in a more orderly and effective manner.

THE POSITION OF THE GRADUATE SCHOOL WITHIN THE UNIVERSITY

John K. Folger
Executive Director
Tennessee Higher Education Commission

Whitehead once observed that it wasn't so important to know where we stand at any particular point, as to know in which direction we are moving. Graduate education today may be moving in more than one direction, and on some issues the direction seems to be circular--with the same problems arising again and again. Certainly the central issues in the organization and role of the graduate school have been with us for a long time--briefly summarized these are:

(1) The graduate school lacks the budget and authority needed to control and direct the development of graduate education in the institution.

(2) The rise of strong professional schools and professionalized departments have affected the unity of advanced degrees, so that instead of a single doctoral degree, we wind up with many, representing different objectives, and conforming to different standards, even though they are all called doctor's degrees.

(3) The graduate school is slow to change, and has been ineffective in dealing with many of the educational problems that confront it. For example, the length of doctoral training has been a subject of discussion by graduate deans for over forty years, and yet the average lapse of time between baccalaureate and doctor's degree has been relatively stable since 1920, in spite of depression, prosperity, and an enormous expansion of graduate programs. Surely a more vigorous organization could have done something to change the open-ended, interrupted patterns of graduate study which have contributed so much to the long average elapsed time.

(4) If the graduate school does have a budget and responsibility for a part of the institutional program, it is usually responsible for research--critics of this arrangement say that this artificially splits research from teaching--and divides responsibilities for what should be a unitary process of teaching and research. Those who like a tidy organizational arrangement find the division of responsibilities between the graduate dean and the other deans confusing and anomalous. Is he a staff officer? A line officer with limited duties? Or does he operate a competing structure, providing rewards for research which give the faculty more autonomy in their relations with the undergraduate deans who have the primary responsibility for teaching assignments?

Any of you who have read the proceedings of the Association of Graduate Schools for earlier decades and the Council of Graduate Schools in this decade will recognize these issues as long standing ones. Most of them are older than I am, and while they sometimes evoke more interest than at other times, they have not been out of the discussion at graduate deans' gatherings very often in the past two decades.

Are there some reasons for the continuity of these issues? You might infer from the long existence of organizational problems that they are somehow caused by the educational process itself, that the structure of knowledge, or the apprenticeship nature of graduate training, or its high cost, or some other educational factors create the organizational problems of the graduate school. I don't think these educational characteristics of the graduate process have any noticeable effect on organizational problems and issues. Instead, I think they arise out of a set of historical circumstances which saw a German pattern of graduate education grafted onto the predominantly undergraduate, pragmatic American colleges. The result was peculiarly American. It wasn't planned that way, but it worked reasonably well, and so it became the American pattern of graduate education.

I'm not going into the history of the development of American Graduate Schools, even though it is the best way to understand the system as it exists today. Instead I am going to assume that you know enough about how we got where we are, and I want to talk about where we seem to be going. I'm going to make another assumption, that all of you are interested in being the leaders of graduate education in your institution, that you want to make a difference in the scope and quality of the graduate programs.

With this assumption, let us turn back to the question of where the graduate school is going. When I discussed this subject last year at the Graduate Deans' Workshop three points were emphasized. First, the stage of development of graduate education in the institution has a lot to do with the dean's role. When a graduate educator is just beginning his personal leadership style, his relations with the other deans and department heads have a big influence on the rate and direction of development of graduate education in the institution. As the graduate program develops, the dean takes on more of the role of manager in a large organization. The amount of managerial responsibility he has depends on the second point that was emphasized, how much and what kind of budgetary responsibility he has. I made the additional point that it was the uncommitted budget, not the total that was most important in determining the kind of influence that the dean exercised.

The final organizational aspect that was discussed was the relation of the graduate dean to the central officers of administration, in particular the academic vice president or academic dean. The key issue is the extent to which the academic vice president views the graduate dean as a line or staff officer, and the kind of relations the graduate dean has with other academic officers.

Instead of recapitulating last year's presentation, which you can read for yourself in the proceedings if you are interested, I would like to discuss some other influences which will affect the organization and direction of graduate education in the next decade. At least two of these are external, and the third is partly external, and partly internal.

The first and most important of these is the pattern of funding of graduate education, and the rate at which these funds will grow. Both graduate enrollment and support for graduate education and research have grown dramatically in the past decade. Graduate enrollment has increased about 8-9 per cent a year on the average during the past decade, while doctoral degrees awarded have increased about 10 per cent a year. At this rate enrollments will double about every 8 to 9 years, and doctoral output will double every 7 or 8 years. A decline in these rates of increase is projected by the Office of Education and by the National Science Board in its recent publication "Graduate Education Parameters for Public Policy." I am not convinced that they are right. The number of college freshmen who say they are going to graduate school increased dramatically from 1961 to 1966, and this interest will probably be translated into a continuing rise in graduate enrollments and degrees in the 1970's. An annual rise in enrollments, after the war and current draft policies have ended, of 7 to 9 percent seems quite realistic until the late 1970's. When we add to this increase in enrollment a rapid increase in cost per student which has also occurred in the last decade, the total costs of graduate education and research have been increasing 15 to 20 per cent a year during the past decade. The National Science Foundation study projects a continued increase in these costs at about the same rate as they have increased in the past decade, and a total expenditure for graduate education and research in the universities of approximately twenty billion dollars a year by 1980, about four times the estimated expenditure level for 1968.

The National Science Foundation estimates contain several assumptions which would tend to hold costs down. We have already indicated that their projections of enrollment are likely to prove conservative. They also anticipate that most of the enrollment increases will be accommodated in the existing institutions, making them more efficient and holding the costs per student down to more reasonable levels. This also seems to me to be a shaky assumption. In the fourteen years from 1966 to 1980, a net of only 68 new institutions are projected at the doctoral level. This trend projection seems to ignore the large number of public institutions that have entered masters' level graduate work in recent years; they will be planning to enter doctoral work, and my guess is that between 120 and 180 institutions will begin to offer doctoral programs in the next decade, unless the federal government and the states adopt policies which will restrict this natural tendency. Up to the last two or three years, federal policies have had an expansionist influence. Development grant programs and congressional pressures to spread federal funds to every state have encouraged more institutions to enter graduate work and to begin doctoral programs. The National Science Foundation suggests some caution about further expansion of institutional capacity, and other spokesmen have recommended even more strongly that the problem is not one of adding more institutions to the graduate group at either masters' or doctoral levels, but one of making more efficient use of the institutional capacity that now exists. Less than half the graduate institutions have enrollment levels that would lead to reasonably efficient graduate class size and reasonably efficient use of faculty as thesis advisors.

The question of how many new graduate institutions will be started in the next decade becomes a more important one if we look at the prospects for support of graduate education in the next decade. As indicated previously NSF has projected a need for an annual level of funding of about 20 billion by 1980. I have indicated that this may be a conservative estimate of requirements. But it may be a very optimistic estimate of what can be obtained from the federal and state governments and private gifts.

Any growth rate in funds in excess of 5-6 per cent a year will require either (a) new taxes or (b) funds which have been going to some other purpose such as defense, space, health, or welfare. A twenty billion dollar level of expenditures represents about a 15% annual rate of increase, and in addition represents larger and more visible amounts of funds. Congress, and state legislatures can be counted on to be more skeptical, and more resistant to large increases in educational support. The NSF report concludes by saying "The next ten years could prove to be the most difficult that graduate education has experienced during its history in the United States" (p. 59 of Toward a Public Policy for Graduate Education in the Sciences). This is my view of the funding prospects. A level of support for graduate education in the 12 to 16 billion dollar range may be all that can be achieved in the next decade. It may be possible to do better than that, but a greater level of legislative commitment will be required than is now evident.

What will be the consequences for individual graduate programs of a more stringent financial picture? There will probably be several. First, the amount of competition between institutions will be greatly increased. The haves will be more critical of the have-nots, and vice-versa. Established institutions will push harder to keep additional institutions from entering graduate work, or from expanding their program to the doctoral level. Efforts to get funds from the federal government will lead to more institutional staff in the office of development, or the office of research, or the graduate office. Faculty will spend more time preparing proposals. If institutional and departmental level type grants grow more rapidly than project type grants to individuals, as seems likely, there will be strong pressures within the institution to allocate them to individuals who are left out of the project grant awards. In the future there will be increasing difficulty in obtaining individual project grants, and the institution will take a more active decision making role in deciding who gets the research funds, and where the developmental monies are spent. Thus the first consequences of austerity for the graduate dean will be to (a) become more of a promoter, and (b) to take a bigger role in the distribution of the funds for graduate education.

There is no guarantee, of course, that these roles will be given to the dean. Others in the institution may be called on to do these jobs. The President, Academic Vice President, or other deans may want to have the major voice in the distribution of developmental funds, and other individuals may take a very active role in raising money. If they raise it, they are going to want to spend it too, and the dean will be left on the sidelines in some institutions.

Another consequence of a possible shortage of funds for graduate education will be an increasing concern with efficiency and economy. Up to this point in time, graduate deans have not had to spend much time on these questions. You have been the guardians of quality, while the business manager, comptroller, and undergraduate deans had to deal with the budget. Because most funds that were specifically identified for graduate education and research came from outside the university, and because graduate and undergraduate funds are not separately identifiable in most institutional budgets, there has not been a central point in the university where the efficiency of graduate education was examined or controlled. The advent of program budgets, and systems analysis are likely to change this state of blissful ignorance rather rapidly in the future. In some institutions this has already occurred, and the colleges and universities are beginning to get some better idea of how their money is being spent, and the relationship between faculty-graduate student ratios and costs of instruction.

Whether the graduate dean will be involved in decisions that will be made about budget allocations in a tight money market, or whether these decisions will be made by others remains to be seen. I think this is an important area where the graduate dean should be involved. The relation of costs and quality is very complex, and a variety of judgments is needed in budget decisions. This is one of the key areas where the graduate dean will need to play a different role in the future from that he has in the past.

In summary, funds for the expansion of graduate education do not seem likely to match the growth in either number of students, costs per student, or number of institutions that will be developing graduate programs. Competition between institutions for external funds will become even greater than at present. Graduate Deans are likely to spend more of their time in fund raising and external relations. Competition within the institution for funds will mean more emphasis internally on budget management, and efficient procedures.

A second external influence on the graduate school will be the continuing pressure for more emphasis in graduate programs on preparation for professional practice in contrast to preparation for research and scholarship. While it is difficult to classify doctoral degrees or masters' degrees as either research training or preparation for professional practice, since many programs contain some of both, as a rough estimate, about two thirds of doctorates give primary emphasis to research training and preparation for scholarship, and one third give major attention to professional preparation. Some of these, like the doctorate in business and education are primarily preparation for professional service, and some programs in the arts and sciences areas, like clinical psychology training, can be classified as practice oriented too, even though research training is included.

The proportion of all doctorates that emphasize research training has not changed much in the last decade, but in the next decade, I think a larger proportion will be professionally oriented. This seems to be the trend because doctorates in sciences and engineering are growing more slowly than the degrees in business, education, and other professions, and they seem likely to continue to grow a little more slowly. Over half of masters' degrees are awarded in professional practice fields, and the inevitable rise in requirements for educational credentials will mean more pressure for professional practice doctorates.

The organizational consequences of this trend are already evident. Each professional school wants to control its own doctorate, and set its own goals and standards, and reduce centralized control from the graduate school. These pressures which have existed for a long time, are likely to intensify during the next decade.

In most mature, well developed graduate schools, control of degree program standards has largely passed to the schools and departments. The graduate school, which exerted considerable centralized supervision of standards in the early development of graduate programs, typically exerts less and less as the programs mature. This indicates that if the graduate dean is to have an important role in shaping the development of graduate education, he must look to other means than standards to exert his leadership. In the large university, the budget is the principal means available for central control, and the dean without a budget is in a weak and probably ineffective position.

The continued growth of professionally oriented doctorate programs, as well as the increasing size and maturity of most graduate schools, suggests that the dean of the future will find a good sized developmental budget even more important.

The final influence that I want to discuss is the students. Just two or three years ago we would probably have assumed that students would be available, that they would be interested in whatever offerings were being provided, and that the biggest problem would be providing support for those who were admitted. That they might be a force for change seemed unlikely. The error of that analysis is clear today. Students are being given, and are taking, a much more active role in institutional affairs, including educational planning and policy making. I think this trend will accelerate and the dean who does not come to grips with the questions of how students can participate most effectively will be out of step with a major trend in education, and will also be overlooking the constructive possibilities of the students' viewpoints and concerns.

It is too early for me to write any prescription for successful involvement of students. Many of you have more experience, and more ideas about this, than I do. But the participation of graduate students, and young alumni, in university policy making may have a significant effect on the role of the graduate school in the institution in the future. Much of the student concern is directed toward achieving for undergraduates the same freedoms, and the same personal relationship with faculty, that already exist for graduate students. My guess is that the involvement of graduate students may change other parts of the university more than they change the graduate school, but in the graduate school they may be the means to deal with some of the situations which have traditionally been difficult to change--such as the better preparation of students for their teaching responsibilities in departments where there has been little interest in this part of students' education. You can probably cite other examples.

In summary, there are a number of external influences which will affect the role of the graduate school and the graduate dean in the university structure. Three have been discussed briefly--the future of financial support, the continued growth of the professional doctorate, and the changing role of students. These influences are likely to affect graduate schools in major ways in the next decade. We cannot foresee their effects very precisely, but they are influences which will affect every dean. If he is a successful dean, he will need to cope with these influences, and see that they move his university's graduate programs in positive directions.

WASHINGTON AND HIGHER EDUCATION: WHERE ARE WE?

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I was flattered but apprehensive to be asked last winter to speak for a second year in a row to the CGS Summer Workshop for Graduate Deans. I am a great believer in quitting while one is ahead, and having emerged from the Penn State Workshop with friends still speaking to me, I hesitated to press my luck. In the end, however, the possibility of escaping from Washington for a day or two and the prospect of seeing something other than smog in Southern California proved irresistible.

I suppose everyone who works the Washington beat is regarded as something of an insider. As a matter of fact, we encourage that illusion. We're prone to hang in our offices a picture of ourselves shaking hands with the President as he hands us the pen (well, one of the 250 pens) he used to sign a major piece of legislation. It's hung unobrusively, you understand, but in a place where the visitor can't fail to see it unless he is accompanied by a seeing eye dog.

Less than three years ago this kind of speaking assignment was fun. I could up-up-and-away myself to any part of the country and say to any segment of education, "I bring you glad tidings of great joy!" Now, however, I can say only that if Mark Twain were living today, he would not be fascinated by the changeability of New England weather. He would be studying Government-university relations.

At the moment the view as seen from my post is not a happy one. We are buffeted by deep crosscurrents, surface disturbances, and hurricane winds in the atmosphere. The Viet Nam war, the Defense Department budget, university reappraisal of defense-related research and ROTC, Selective Service problems, a questioning of the value of basic research, the competing demands for funds to meet other clearly essential domestic needs and, above all, campus unrest ranging from legitimate protest to violence all have their effect on the present state of higher education in Washington.

I know you are aware of these problems, but living with them and trying to cope with them day by day is not the happiest of tasks. I am reminded of an old friend from my New York State days who was overly fond of the bottle. When he showed up on the first tee one Sunday morning with particularly bloodshot eyes, I couldn't resist an unkind comment. (He was to be my partner.) "Boy, Jack," he replied, "if you think they look bad, you should see them from in here."

Still and all, if only because otherwise life would be unbearable, I am bullish, not bearish, about the future. I got into this business over ten years ago because as vice president of a reasonably distinguished and outwardly prosperous educational institution, I became convinced that no institution, public or private, could maintain quality, fulfill its mission, meet its responsibilities, and cope with the future unless the Federal Government moved in a massive way to provide assistance. That is scarcely a novel thought these days, but in cleaning out our files the other day, one of our secretaries ran across a memorandum from a former president of the American Council on Education stating flatly that the Council took no position on the desirability of Federal aid.

It has become commonplace to refer to existing Federal programs as a hodge-podge, a crazy quilt, a designless structure. The picture drawn is one of chaos. In recent years we have seen a mushrooming of free-lance Washington representatives who feed on this notion and who promise, for a fat fee, to lead college administrators through the Government labyrinth to a pot of gold. My impression is that most of them, who have ranged all the way from honest brokers to hucksters, have either failed to survive or are living on lean fare indeed--not because they themselves lose the way, but because the labyrinth isn't all that complicated. The route is increasingly well marked and, in the field of higher education (I cannot speak for other levels of education or for programs in support of other social programs), there appears to be little need for a professional guide. The problem is that the pot of gold is not as large as it is reputed to be, clearly not large enough to meet our needs and, for some institutions and some purposes, there is almost no gold at all.

As I see the developments of the past ten years we have been putting together, piece by piece, often rather painfully, what is beginning to be not a hodge-podge but a mosaic. Obviously it would be impossible, in the short time at our disposal, to identify all of the parts, but it should be possible to see the pattern and to suggest the shape of the missing pieces. A good place to start might be the National Defense Education Act of 1958, for it seems to me that that Act set the Government on a fixed course, deliberately and directly, into the field of education. It was as if the landmark Morrill Act of 1862, the enormously successful College Housing program, the rapid development of the National Science Foundation from an institution concerned primarily with research into one concerned with all aspects of science education, had been trial runs. They had charted the seas and tested the weather, and the maiden voyage was at hand. To be sure, we were still a little uncertain of ourselves. We euphemistically called it a defense act. But I don't think the euphemism fooled anyone--least of all the authors of the Act.

In that Act we recognized that there were many young people who needed financial help if they were to make the step from high school to college, and we provided them with loans.

We recognized that our universities must step up the production of Ph.D.'s, and that we must develop more institutions capable of granting the Ph.D., and that the expense of doing so was far in excess of what State and private resources could meet. So we instituted a fellowship program to support the student and a system of concomitant grants to institutions to help defray the cost of expansion.

The authors of the Act identified the weakness of our guidance programs in the lower schools; our National illiteracy in the field of foreign language and area studies; the need for better and more modern teaching aids in our classrooms; the need to stimulate educational research and disseminate its results; the need to strengthen the educational administrative structure in our states. Having identified these weaknesses and needs, the Act provided funds, Federal tax funds, to meet them. It is important to note, moreover, that in the field of higher education the funds were provided without regard to whether the institutions were public or private, secular or sectarian, large or small, of high quality or simply of would-be high quality. This is a pattern from which we have never deviated.

I suggest that in September, 1958, the Congress laid the first large piece of the mosaic and that all that has followed has been a logical development from that start.

The patterns established in the NDEA fellowships were applied by the National Science Foundation, NASA, the National Institutes of Health, and other agencies in their fellowships and traineeships.

It became apparent that the institutions' physical plant would have to be greatly expanded until well into the 1970's if all potential students were to be accommodated. So we have the Higher Education Facilities Act, which at first was limited to buildings designed for specific purposes, but soon expanded to cover almost all of the academic functions of education. The authorization level in this Act would suggest that the Federal Government is ready to pick up approximately 60 per cent of the tab for the estimated $3 billion annual outlay for needed expansion.

Loans as a method of funding needy students have their limitations, especially as we move down the economic scale in our search for more disadvantaged students. Thus we now have Educational Opportunity grants for our most impoverished youngsters, and a subsidized work program for students who need additional help to balance their budgets. We have learned, in short, that as we reach out and down, we must not pile debt on debt upon our most deprived young people. We give our neediest a boost with a grant that those from more fortunate circumstances expect as a matter of birthright from their parents. We give them a chance to work--to perform meaningful work--so that they need not feel they are totally dependent on charity. We expect them to borrow--but in moderate amounts--on the grounds that higher education is not solely a charge on society; it is also a personal investment in one's future that pays rich personal dividends.

We have recognized that because of incrusted patterns in our social structure, it is not enough for education to say, "We are here." We must stimulate and motivate youngsters to reach for what their parents have thought unreachable--"to dream the impossible dream." So we have the Talent-Search Program.

We are learning the hard way that motivating and recruiting is not enough. Tossing a youngster into the middle of a stream and saying, "OK, lad, you've made it!", produces a lot of new swimmers, but an unprecedented number of drownings. So we have on the books an act (still unfunded) to provide special services to the disadvantaged. If we do the job we must do in the field of elementary and secondary education, this program will become superfluous but, at the moment, I view it as essential to everything else we are trying to do for the disadvantaged.

We have become aware that merely producing more Ph.D.'s with their research-oriented training cannot possibly meet the teaching needs of our complex of higher education. We need teachers--plain, glorious teachers--to teach at the undergraduate level, at the junior college level, at the sub-professional and technical level, where our universities have been singularly remiss in supplying the necessary manpower. So we have the Education Professions Development Act to encourage and to fund programs especially designed for the sub-Ph.D. level.

We have agreed that our institutions must be reservoirs and pipelines for existing knowledge, and we have devised Federal programs for libraries, for computers, for indexing and cataloguing, that will assist them in filling these roles.

The list is almost endless. We know that there are institutions of higher education that are inadequate. They exist; they serve large numbers of students, particularly from minority groups; but they fall far short of acceptable standards. The choice has been to let them perish or to try to breathe life into them. We have decided--wisely I think--on the latter course and so have the Developing Institutions program. We know that universities have some capacity for assisting in the solution of complex urban--and indeed rural--problems, and we have enacted the Community Service Program. In short, pieces have fallen together, and we can, I think, envision the shape of things to come.

It has become fashionable to refer to all that has developed in these past ten years as "categorical" aids and to use that term in a derogatory sense. I do not question the adjective; I do question whether it should be regarded as derogatory. What three Administrations and five Congresses have sought to do is pinpoint our greatest weaknesses and most pressing needs and zero in on those targets. We have many miles to go, and we are still feeling our way. But why shouldn't we? No nation on earth has ever attempted what we are attempting--to provide full educational opportunities for all our citizens.

We are not yet, unfortunately, able to assess the impact of these ten years. The Carnegie Commission's report on the underprivileged's access to post-high school education was based on 1961 figures, before any of the programs about which I have been speaking were in being. This is not the Commission's fault; no better figures were available.

So it boils down to a matter of faith. I believe, and I believe deeply, that if we could only get adequate funds, most of what we already have in place would bring us 80 percent on the road toward our national goals. To be more specific, I do not believe that we need tear down existing structures and start all over again.

Let me take the one goal of full access to higher education as an example. We have built a program which those of us in the "Establishment" think can work. It consists of grants, loans, and work. It presupposes that state and local support of public institutions, perhaps even of private institutions, will help to keep charges to students down. It also presupposes that freedom of choice for the student will be maintained by providing, through private funds and additional personal sacrifice, access to private education for those who choose that route. The authorization for the Federal share in the student aid endeavor for Fiscal 1970 for direct appropriations is $630 million, and the institutions have indicated that they could use every cent of it effectively. Yet the probable appropriation for these programs is only $461 million. I suggest that our 2300 institutions have learned how to recruit. They have searched out and identified young people whom they believe to have the desire and the capacity for higher education. Yet the shortage of funds will force them to bypass almost 25 percent of those whom they have identified.

So it goes with virtually every other existing Federal program, except that most of them are even more starved than is the student aid program. The facilities program is likely to come to a complete stop, except for a pittance for junior colleges. Fellowship and traineeship programs have steadily been cut back. Special Services for the Disadvantaged? It's still a dream! Proposed funds for all our so-called developing institutions? The total is less than the annual endowment income of one of our major universities. Community Services? The proposed appropriation could probably be used effectively in one of our major cities.

Those who would blueprint the future of the Federal investment in higher education seem to base at least some of their thinking on the proposition that what we have tried to do has failed. As I have suggested earlier, I am not sure that they are right, because the evidence is not yet in. But if we have failed, I suggest that it may be because we have not had the funds to make it work. I hope we will not scrap the existing blueprint until we have at least made a try.

So far, the Congress has tried to meet the most urgent needs of education by a reshuffling of priorities within a total and fixed budget for education. Clearly this will not work. It makes no sense to recapture facilities funds at the expense of student aid, or funds for upgrading ghetto schools at the expense of teacher-training programs to staff those schools. We will never break through until the priorities are reshuffled within the total Federal budget, and to bring this about I conceive to be the responsibility not only of groups like graduate deans but of our entire citizenry.

Now let me move to some of the additional pieces that might be added to the mosaic. Here I will undoubtedly display some of my personal biases. But to the extent possible, I shall try to present the views of the higher education establishment.

So far I have devoted myself largely to the teaching functions of higher education. Where does research fit in? It is my view that if educational institutions will limit themselves to basic research or, perhaps in the case of engineering and certain of the social sciences to applied research as well, and that if they will undertake only that research which serves the dual purpose of advancing knowledge and educating the next generation of scholars, there need be no limit on the amount of such activity they undertake. I see no place in universities for purely developmental work or for research unrelated to the education of students. I find the term "non-teaching professor" ludicrous. Industry, Government laboratories, and the so-called non-profit research institutes should be able to handle the Nation's needs for research and development when it is unrelated to the educational function. But an important corollary to my proposition is that, if the universities are to expand their research activities within the guidelines I have suggested, it is essential that the Government pay the full cost of the research it supports. Under the current requirement that universities share in the cost of that research the inevitable result is that university funds are siphoned away from programs in which the Government has no special interest. Thus, the Government in effect determines the university's priorities.

To be more specific, it seems almost inevitable to me that the Government's chief concern is likely to continue to be in the area of science and technology. I do not refer exclusively or even principally to our defense effort or our space program. I refer instead to the field of biochemistry and other health-related areas, to the fields of food production and pollution control, to the technology of education and communications, and to a host of other areas in which there can be a possible, a measureable and a politically defensible return on the investment.

But what of the more controversial social sciences and of the humanities and arts? In the ideal world they would receive their commensurate share of Federal largesse. But I do not expect to live long enough to see that ideal world, and so I prefer to dwell on the present and immediate future. I think it realistic rather than pessimistic to suggest that we cannot hope to see a growth of the Humanities Foundation or the proposed Social Science Foundation as a 1970's counterpart of the 1950 National Science Foundation. These fields are not likely to provide a payoff that the public seems to expect and can understand. The projects they are likely to support and should support are too easily pilloried by critics. Fragile plants, however beautiful, wither under the blight of controversy. But if the Government will support fully those areas of inquiry which the public can understand then the universities can channel their own resources to intellectual pursuits that are too esoteric, or too controversial, or too far out for the public to be willing to support.

There is increasing criticism of the Federal programs even in the area of scientific research. It is a criticism based on the fact that we have relied almost totally on the project system. This, it is claimed, has resulted in a kind of super-establishment where members of the club scratch each other's backs, where it is hard for the new man to break in, especially if he has off-beat ideas, where loyalties have been transferred from institutions to Federal departments, and where the destinies of those institutions are less and less in control of the institutions themselves. I believe few would advocate an abandonment of the project system as the base for scientific research. But I believe we must devote a larger share of the Federal research budget to institutionally conceived and determined research programs.

For the most part the Federal programs we now have in place are egalitarian in nature. I make this statement despite repeated Congressional protests that Federal funds are concentrated in a handful of institutions. If one removes the approximately $1.3 billion in Federal funds that are devoted to research, assigned largely on the basis of quality or at least presumed quality, one will find a remarkable dispersion of Federal funds among all kinds of institutions. Summer institutes, curricular reform programs, facilities grants and loans, equipment grants, funds for library acquisitions, and a host of others have been spread widely, if all too thinly. I doubt whether we can or even should change this pattern.

Perhaps what we should do is to set up a kind of university grants committee modeled after the British system to identify and nurture high quality education wherever it exists at both the university and college level. This is not a revolutionary suggestion. The NSF has already made a start along these lines in its various science development programs.

It seems to me that the largest single missing piece, if we are to complete the mosaic, is to provide general institutional support for all of our institutions of higher education. Call it, if you will, a national endowment, with annual payments assured to all accredited institutions, to be used exactly as if it were endowment income. This is not a revolutionary step. We have already tried it in the case of the land-grant colleges and found it to be enormously successful. Such a program could undergird the various categorical programs we have been discussing. It could provide funds indirectly for institutional programs that are not likely to win direct Federal support. It could enable institutions to resist the explosive pressure to increase their charges to students. It could help the weaker institutions improve the quality of their work and, at the same time, enable the strong institutions to move toward even greater excellence.

I believe that higher education is virtually unanimous on the need for this next move. If disagreement exists, it is largely a disagreement on the mechanics and details rather than on the concept. I believe that if we could agree on a program to reward quality where it exists, we could then agree that general support should be egalitarian in nature, based on such easily derived data as student enrollment.

I have left untouched a variety of problems. Obviously we must assure ourselves that the growth of Federal programs will not dry up state and local support on the one hand and private support on the other. I do not minimize this danger, but I cannot help but observe that alongside the growth of Federal support in the past decade there has been an equally fast growth in support coming from the states and from the private sector. My guess is that there will be a gradual shift in the balance and that the shift will occur at different levels. Are we not, perhaps, at the point where responsibility for medical education will be almost totally a Federal one? With the mobility of our most highly educated manpower, may not graduate education a decade hence be in almost the same position? Is it not possible that the more nearly institutions are identified with local needs the more clearly it will be the responsibility of local sources to fund them? If such a question has any validity, it suggests to me that once the needed institutions are in place, the facilities built, the teachers educated, the students adequately funded, and the basic financial undergirding provided, the degree of Federal responsibility will be directly proportional to the national as opposed to the local characteristics of each institution.

Today in Washington, and I presume in the larger world outside, all kinds of propositions, ideas and techniques are being discussed. This is good and probably desirable at any time, but is inevitable now in view of the suffocating pressures of the Defense budget, which apparently make it impossible to meet our social and domestic needs. Thus there is talk of transferring loans for facilities and for students to the private sector by means of interest subsidies, despite the fact that in the long run there is no more expensive a way to provide those loans. There is talk of charging in fees the full costs of higher education and letting students repay over a lifetime, despite evidence in our own history and that of other nations that inexpensive access to higher education is the strongest possible motivating force. There are those who seek ways to reduce the Federal investment in higher education while they still look with pride at the days of the World War II GI bill, the only time we have come close to providing total access to higher education, and despite the claim that that investment has been repaid many times in tax revenues. There are those who press for a variety of tax reform measures which can only reduce the ability of the private sector to carry its share of the load and, at the same time, insist that the private sector must increase its support.

I must leave it to the economists to determine what the Federal stake in the future should be. I have no reason--indeed I have no capacity--to quarrel with the projections made by such experts as the two Bowens or the Carnegie Commission. If we can agree on the dimensions of the structure and the sources of the materials, I believe we should be open minded on the ways the structure is to be built.

But let's not underestimate what we have already achieved. I do not suggest that all the pieces now in place fit perfectly. Everyone in this audience, everyone on our campuses, and everyone with whom I associate in Washington has ideas for improvement, for reshaping, for achieving a better fit. I simply suggest that before we go into drastic remodeling or, worse yet, tearing basic elements apart and starting over again, we take a long look at what we have and a careful and up-to-date assessment of what we have achieved. We just might surprise our severest critics and even ourselves.

May I be permitted one last word. What has been accomplished in the past ten years has come about, in the main, because we have been able to develop a kind of consensus among the sometimes competing elements within higher education and, even beyond that, within the total enterprise we call education. I need not spell out for a group as sophisticated as this the difficulties involved nor the delicacy of the alliance. We have seen throughout the educational community a genuine and successful effort to find accommodations, to make concessions, to adjust individual goals, and even to unfix fixed positions for the good of all. There is room in the world of ideas for all kinds of new approaches and for exploring unblazed trails. Today, as Jimmy Durante has observed in another context, "Everybody wants to get into the act." I find this healthy and productive. My plea is that those who would blaze the new trails across the mountains recognize that those who have worked the valleys have had to find their way around many hazards and obstacles and despite this have pushed far forward.

I suggest, in short, that our problem at the moment is not so much the trail as the roadbed. As long as men have organized themselves into governments, the chief problem has always been the allocation of resources, and it is here that the educational community has failed. Once the battle for authorizations has been won, we have relaxed with a feeling of satisfaction. But, until we have adequate funds, our achievements have been at best symbolic victories and at worst have raised false hopes. The need now, from this observer's perhaps myopic view, is not for a new trail; it is to open the one we have built to freer movement of traffic.

GRADUATE ADMISSIONS: THE IMAGE OF GOVERNANCE

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Since at least two of our conference confreres are scholars of medieval English, a humanist such as I can no longer rely on the old canard which states that the unholy odor of academic administration chiefly attracted chemists to the diaconal sedes. Instead I shall have now to apologize for the new--or old--scholastic stench that will scent my remarks.

In order to frame a larger context for the conflicts in authority that characterize the admissions policies and practices of a large but still growing graduate division--and, I take it, a fairly representative one--I have decided to fall back on a Tudor tractate whose title is appropriately symbolic--The Image of Governance--compiled and translated by Sir Thomas Elyot. Searching among his books in the early 1540's, "almost fatigate" (like many a would-be scholar turned administrator) "with . . . longe study" in the "correctinge and ampliatinge [sic]" of his, let us substitute, "Graduate Catalogue," he turned to something he had been working on many years prior--notes on the form of good governance, eventually to complete them under the title The Image of Governance. Where Elyot used the word "image" to mean "perfect model," I shall use the term to mean "refracted appearance," for I shall contend that the admissions section of any graduate division is probably the place where the crazed reflections of ambiguous university policies can best be caught in all their elusive uncertainties. The graduate dean of an expanding university ignores the psychedelic quaverings on the admissions wall at his peril!

Of the three types of Admissions operations with which I am more or less familiar, UCLA Graduate Admissions represents a middle (and, ironically, "uncertain") ground between the few all-powerful "Admissions Offices" (be they purely "Graduate" or "Combined Graduate and Undergraduate Offices) on the one hand and the many totally diluted "Graduate Collation" sections on the other. We stand or, more accurately, sit in the middle, since we have the power to reject those screened applicants who fall noticeably below University standards without consulting the departments, yet do not offer admission to any applicant until his papers have been reviewed and favorably recommended by the department. We are, in short, more nearly a "Rejection Section."

Since it may be of interest to deans of recently emerged or expanded graduate schools, let me briefly reconstruct the historical oddity of our position, for, although it operates under the same Academic Senate charge, our older sister, Berkeley, the Alma Martyr of the North, has in effect renounced that intermediate position, out of sheer weight of numbers I suppose. Let no new dean fail to recognize that quantitative pressures can produce qualitative changes--for good, for bad.

Under powers delegated it by the Board of Regents of the University of California, the Academic Senate is authorized, "subject to the approval of the Board," to determine the conditions under which admission may be offered to undergraduate or graduate applicants. Under Title Three, Chapter One of our Manual of the Academic Senate, a committee of the Senate, the "Graduate Council", is further authorized to admit "persons" holding bachelor's degrees from legally constituted and reputable institutions, if those institutions maintain standards that are accepted as "equivalent" to those of the University of California or to admit applicants holding "any other degree or certificate" which the Graduate Council concerned (please note how local variance can arise) may accept as equivalent, provided that the official credentials presented show that the scholarship requirements imposed by the Council are satisfied.

That set of conditions, I take it, had been in effect when UCLA, thirty-five years ago, formed its first graduate council. Meeting at first as a council on its limited list of applicants, under the pressure of numbers it finally delegated its power to review applications to its appointed dean. Lest the departments, however, still in flux and ferment, should conceivably abuse authority--or so I distantly hear it--a separate Admissions section was established with the power of rejection implicit in its function of reporting to the Dean. What was feared, I dare say, was that the fledgling coveted Berkeley's sky-high reputation, but dared not follow Berkeley's flight. There, for the most part, the Graduate Division Admission Section merely collated papers, and submitted them to the departments with notes indicating that such and such a dossier was technically unacceptable unless the department had further grounds to support a recommendation for admission, to be approved or disapproved by the Dean (or the Associate Dean on-duty, so to speak). Wishing and yet not daring, UCLA took the middle ground. "Admissions" became "Rejections"; only the departments, ironically, by custom, had the power to recommend admission, once Admissions had certified admissibility by its evaluation of transcripts (and, in a negative way, by its rejection of "unqualified" students.)

Since our Senate Manual was deliberately general in its legislative description of the General Requirements for Graduate Admission, questions of determination of authority or interpretation of "standards" or "scholarship requirements" constantly arose. As a result of anger arising out of ambiguity, the State-wide Coordinating Council for Graduate Affairs (CCGA) in its April meeting, 1962, sought to define minimum standards for graduate admission "sufficiently uniform" (there's ambiguity again) to facilitate the transfer of graduate students from one campus of the University to another without the necessity for reapplication (a blessed event never yet consumated, to reverse the usual process). As a result it offered lines of guidance "not intended for publication" (this is called "belling the mouse")! Among those covert signs were 1) the establishment of a minimum "B" or 3.0 average, in the last two years of undergraduate study (the major, of course, included) and a similar minimum in post-baccalareate study, 2) the stipulation that evidence of the applicant's "ability to carry on independent investigation," scholarly study, creative writing or gifted performance could offset deficiencies in undergraduate program or grade-point achievement.

Such a declaration, covert though it was, nonetheless greatly broadened the range of interpretation in admissions matters and gave necessary scope at long last to the arts of performance, studio and conservatory which had gathered great strength at UCLA in particular. Thus, however belatedly admissions policy reflected increased campus pressures on graduate governance, our dimness as a mirror took on a dull but more nearly reflective sheen.

The most recent addition to our list of powers to be mooted is the innocent statement in the By-Laws of the Los Angeles Division of the Academic Senate that the Graduate Council is assigned the power of granting certificates of admission to "qualified students." Although I may have used the term "qualified" earlier in this paper, this By-Law is the first to use it in the various charts of the graduate rocks and shoals published by the Academic Senate or any of its constituent members. It may offer us an important straw at which to clutch, depending of course on whose hand is clutching what these days. I have sought to use it as a means of extending the special outreach beyond the academic transcript accorded us in the CCGA guide lines of 1962. A well recommended applicant with mature experience in the field or at a responsible job, I would agree is a "qualified" applicant for entrance into an MSW or MPA program. In this way perhaps we can begin genuinely to enlist and enroll extensive recruits from barrios and ghettoes so that the Image of Governance will truly be burnished and refurbished if not by Justice then by Equity.

I must confess, however, that not all my colleagues are quite as optimistic or reckless as I may seem to be. Our Graduate Council is prepared to take what may prove to be a wise but middle ground. Convinced that the Academic Senate must face its primary responsibilities for the establishment and maintenance of University Standards, on June 6, 1969 it unanimously approved the policy statement that "schools and departments considering major deviations from established [not necessarily "published"] University admission standards shall submit a formal plan for approval in advance by the Graduate Council."

So much for questions of admissions policy and authority as they expand, contract or shift in often unacknowledged response to pressures both local and large. To repeat my initial caveat, I do not for a moment suggest that our policies or practice are "models." Rather I present them as refractions of a changing image. Some of you may be consoled by, or alarmed at, seeing your own reflections in the process. While I believe that we now have rather generous policy definitions within which to "evaluate" our applicants for graduate admission, I am by no means persuaded that we have developed sufficiently fine and accurate non-academic criteria for our so-called "preliminary evaluations." Nor am I satisfied that our "academic criteria" are sufficiently discriminating and predictive. Neither is Frank Koen, our next speaker, I am sure. And that is why he will present his views on the matter as soon as I have presented the other side of the admissions coin--the experiences we have undergone technically and clerically in adjusting not only to the expansion of policy but to the burgeoning of applications numerically, a preview perhaps of your own fates by way of retrospect.

I am shifting, thus, from the relatively rarified problems of policy and its determination or authority and its clear sanctions to the mundane and pedestrian, daily and dreary mechanics of the Admissions process. Graduate deans, I suspect, regard that process as they regard the weather, something constantly to be plagued by but a vexatious matter they care to do little about. They do not, I further suspect, fully follow the petty complexities of the Admissions maze, perhaps because it often seems such a monstrous growth out of the unicellular policy that originally provided it nourishment.

At the risk of shifting so violently from the abstract to the concrete as to leave the audience behind me on the further shore, let me present some well-rounded statistics to indicate some of the problems attendant upon expansion and growth.

I first came to UCLA's Graduate Division as a step-four Associate Professor and the first (and to date "only") Associate Dean, Graduate Admissions, in the late Fall of 1961. UCLA was beginning to feel the accelerating impact of a rising rate of applications. For the Fall term of 1959 it had received 3,640 applications; for the Fall of 1960, 3,830; for the Fall of 1961, 4,665 and for the Fall of 1962 it was to receive 4,900. For the Academic year 1961-62, all told, (the Spring term included), we received 6,470 applications. Out of the Fall total of 4,665, 2705 were offered admission and 1650 first year graduate students actually registered.

By the Fall quarter of 1968 alone--note that we had meanwhile gone on "year round operation"--we offered admission to 4,695 students, or 30 more in number than the total of the applications received for the Fall semester of 1961. For the Fall quarter of 1968 we received 9,250 applications or an increase of almost 100% in the application rate in a 7 year period. Our upward inclined statistical slope had climbed steeply in the middle '60's: an increase of 8% in '62; a leap of 28% in '63, virtually repeated in the +24% of '64. By 1965, for the Fall and Spring semesters of 1964-65 we had received a total of 11,365 applications or an increase of 75% or so over the year's total, 1961-62. For the year 1968-69 we estimate that we shall have distributed approximately 45,000 applications which will have yielded about 15,000 "applications received," out of which 13,750 will be "applications completed." From this last figure we may offer admission to 5,300, of whom perhaps 2,800 to 3,000 would actually register if graduate enrollment had no draft board impediments.

In the seven year span 1961-68 the Graduate Admissions staff itself doubled to try to keep pace, increasing from twelve in number to the present twenty-four. We have altered procedures annually and, at times, semi-annually or quarterly in order to try to produce administrative dividends. We have reorganized and redistributed staff with almost as much frequency. To show you what is behind the mirror of governance or to analyze the rickety frame in which it is held, let me rehearse the structure of our Section, in the hope that it will be of some use to the workshop, if only to dissuade others from following our wantonness on the primrose path whose ultimate destination none of us may be able to avoid no matter what the route.

We divide our office functions into two large sub-sections: the first I call "reception and processing," the second "evaluation." Over our 22 staff members sits a Senior Administrative Assistant, top-scale, responsible for the operation of the entire section, aided by a Senior Administrative Assistant, Step II, in charge of the Evaluation sub-section.

Under these sits an Administrative Assistant in charge of Reception, (by which I mean receipt of mail as well as response to inquiries made in person), Counter and Files, with five ladies of light assisting her; an Administrative Assistant in charge of processing and departmental circulation, with five processors aiding her; an Administrative Assistant who has an evaluator under her, the two acting as a special team with the Senior Evaluator, herself nationally recognized as an expert on foreign credentials; and two sec-stenoes and a typist-clerk, one secretary for my own assistance, one for the assistance of my two Senior Administrative Assistants, the typist-clerk to help out the evaluators and keep our reference library current.

Reception and "Processing One" assemble and screen all applications, assigning priorities to dossiers in terms of "scanned" transcripts, special tokens of distinction [National Fellowships], or Special recruitment programs [Master's Opportunity or Doctoral Opportunity Fellowship applicants]. Evaluation rejects those that fall noticeably below minimum University GPA (3.0 in the junior-senior year courses and 3.0 in the major) but passes on to the departments those applications that meet or nearly meet the minimum GPA, have scored well on the GRE, have shown evidence of creativity "off the transcript" or have provided testimonials of special experience in, or distinguished service at, their tasks. "Processing Two" does not offer admission until the department formally recommends acceptance, however.

Rather than plunge you into the tedious, time-consuming but nonetheless still individually important steps followed in the processing of an application, (there are at least five separate bits of correspondence for each dossier, on the average, since many applicants are garrulous or seek to "overkill"--and these qualities both betray academic angst), I'll try to review the changes we sought to incorporate in our processing and evaluation of applications in the hope, once again, that newly anointed deans in newly furbished offices can benefit from our gropings.

To begin with we cut down on the extensiveness of our transcript evaluations. Rather than compile four averages (lower division, upper division exclusive of major, major and four-year average), we compile the GPA just for the major and upper division courses outside the major. This we did not only to save some time but also to highlight the preparatory focus on a graduate concentration. We further decided where an applicant had attended several schools to use the "major document," that of the reputable graduating school, on which to base our chief estimate of a scrambled set.

In order to prepare our evaluator more readily for the contents of a dossier, we also initiated a system of preliminary scanning in which, by colored markings, we tried to separate dossiers 3.5 and above, from those with a 3.0 to 3.5 average and those somewhat or very considerably below 3.0, the "University minimum GPA."

Since we require two sets of transcripts from each applicant, one for the use of the department, the other for our own records, we have more recently tried to make expeditious use of the departmental copy, especially of those "scanned" high, by sending on the transcript "unevaluated" to the department, together with a covering form-note. If a department were notoriously cautious, **it at least** had been more fully alerted to the applicant's **background and interests** and could speculate on how he might fit into the department. If it were freer wheeling, it could thus take action on a man whose record by all external signs seemed acceptable at the worst and eminently desirable at the best.

If I were to summarize our theory of change, I believe I would divide it into two parts: on the one hand to relinquish the obvious and easy things to the 75 schools and departments we serve, and to develop admissions' specialties (e.g. the foreign student records; the careful study of "marginal" records); and on the other to decentralize Admissions' activities through the joint appointment as Assistant Deans, Graduate Admissions, of faculty members already serving as Assistant Deans, Graduate Affairs, within the professionally oriented schools of Engineering and Applied Science, Graduate Business Administration, Education, Library Service, Architecture and Urban Design, Social Welfare and Public Health. Through such joint appointments the chain of command is visibly and, we believe, responsibly extended. These jointly appointed assistant deans will have powers of decision subject to our post-audit for accountability. We are still in evidence if only to direct the admissions they recommend into a pre-registration syndrome of petty but useful or prerequisite matters: appointments for Health Examination; pre-registration by mail; housing and parking; and appeals for special services (information liaison with Draft Boards or Agencies aiding the physically disabled). In addition we prepare the first stages of a "Registrar's Profile."

We have not, I believe, abrogated any sacred obligations in moving into the position of careful propaedeutic agent nor been relegated to powerlessness by performing as watchful post-auditor. To be a mangy lion at the rusty gates is to lose one's teeth needlessly gnawing on tiny bones. Our action reflects, I believe, the practices of persuasive governance that by American custom characterize the graduate school. We can reject the palpably unfit; we can seek to act as friendly advocate for the promising student before the departmental bar; we can play the role of stern post-auditor in loosely documented special departmental recommendations. And this we can do through the circulation of factually eloquent information.

Yet, as my Tudor friend, Sir Thomas Elyot would remind us, the vice gotten by custom may soon be considered a natural habit. He puts it charmingly in a passage from the Preface to The Image of Governance. I modernize his spelling.

> A good woman had a husband who would be oft-times drunken. Wherewith she being ashamed, and devising by what means she might cause him to leave that horrible vice, at the last, when he was asleep, she carried him into the charnel house, wherein were put the bones of dead men, and leaving him lying there, she made fast the door, and departed.
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> And when she thought that he was waking, she, taking with her bread and meat, returned to the charnel house and knocked at the door. Her husband faintly asked who knocked there; the good woman answered, "I, which have brought meat with me for the dead man." "Peace," said her husband, "thou increasest my pain in speaking of meat. Bring me some drink, I beseech thee."
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> That hearing, the good woman, "Alas," said she, "that ever I was born, for this vice, gotten by custom, my husband hath made it a natural habit, which will never forsake him."

Although I have modernized, I shall not moralize. Admissions reflects the ambiguities of graduate governance in terms of policy. Admissions as an administrative problem, I believe you are likely to find, is likely to be spoiled meat rather than vintage wine. And, as Frank Koen will point out, Admissions may become a charnel house unless it finds fresh and useful objectives that are wider in scope in one sense and deeper in penetration in another. Who else, given imagination, for example, is in a position to bring forward the "facts" and correlations concerning the "standards" so stubbornly clung to yet so precariously proclaimed?

WHAT ARE YOUR OBJECTIVES?
SOME IMPLICATIONS FOR ADMITTING GRADUATE STUDENTS, TRAINING COLLEGE TEACHERS AND EVALUATING TEACHING

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Today, I would like to talk about three separate, but related, topics and in all I will urge that we plan our efforts in terms of their expected and desired outcomes, and then judge our success through a systematic comparison between desired and obtained results. The three topics are graduate admissions, the training of graduate student teaching assistants, and the evaluation of teaching.

The factor that played a major role in these thoughts about graduate admissions was the realization that typically something like 50 per cent of the students who are admitted to graduate school do not complete their doctoral degree. Knowing that graduate education is extremely expensive, it seemed to me that any action that holds out hope of reducing this attrition rate deserves consideration. It is some suggestions along this line that I would like to lay before you. Specifically, I wish to suggest that the attrition rate could be lowered if (1) we admitted new students on the basis of more relevant criteria than we customarily use, and (2) we made clearer to the applicant the actual conditions and expectations that he faces in establishing residence and studying in our institutions and departments. However, I will discuss only the first of these suggestions.

With reference to the first suggestion, it seems to me that we have generally failed to gear our admissions procedures to enable us to select or recruit those individuals who possess the qualities and capacities we, in fact, want. That is, we assert that the desired products of our Ph.D. programs are people of imagination, initiative, rigorous thinking and independent judgment, who upon entering, possess the propaedeutic skills and knowledge that form the basis for advanced work in a given discipline. But we do not ordinarily collect the relevant data that would enable us to accurately judge whether applicants do indeed have these qualities.

I am proposing as a general principle that you analyze the nature of the product you are turning out--your goal--the kind you reward and perpetuate by awarding certain degrees to--and search for those qualities in applicants. Where does one look for such information? The reasonable place seems to me to be the past performances of the people being considered. So we obtain and weigh carefully sets of grade point averages. What do these predict? Grades in graduate courses, probably. But it seems to me that this strategy fails to take into account the striking differences in what it takes to be successful in conventional high school and undergraduate curricula on the one hand, and degree-attaining graduate study on the other. It is not often graduate course work that erects impassible barriers to the student. Problems most often arise in connection with the other qualities expected of graduate students--those associated with independent scholarly work--some of which are motivational and personality factors, and other sophisticated skills not often needed at lower educational levels. It should be possible to assess these characteristics more accurately than we usually do.

Analyze, on a departmental basis, the qualities exhibited by successful Ph.D. recipients, and then search for the kind of information that is most directly relevant to each. I realize that most professors do not think in terms of psychological variables. Therefore, the task is properly a cooperative effort between the professor and an expert in psychological measurement. After the qualities and skills have been identified, the next step is to attach relative weights to each of them. You then seek information about the existence and relative salience of each quality in your applicants.

Particularly important is the probability that graduate students differ more in terms of motivational factors and intellectual "styles" than in aptitudes. These may be crucial to successful study but we seldom get any systematic information on them. What are some of these factors? Let me quote from Paul Beichner's statement at the Fifth Annual Meeting of the Council of Graduate Schools in 1965. He said we are looking, not for geniuses, but for "hard-working students of some talent, who, along with an appetite to learn and a deepening interest in a field or discipline, have curiosity, initiative, imagination, respect for evidence, and 'sitting powers'--the ability to stay with study when action seems much more attractive." Let us turn our attention to a quality that Beichner did not mention directly, but which a good many of us would certainly cast our ballots for--creativity. We would like to produce creative research-scholars. In order to do this, we can either undertake to increase or foster the creativity of our graduate students by training, or we can try to select the more creative applicants--most probably, we will try to combine the two strategies. Fortunately, this problem is being attacked in a systematic and sophisticated way by Dr. Stephen Klein, who is associated with ETS, and hence can bring to bear all the expertise and competencies of that organization. He is trying to develop and validate a measure of creativity that can be used in conjunction with the GRE. If he is successful, the result should prove a boon to hard-pressed graduate admissions officers.

Klein is seeking evidence of creative achievements in the past activities of graduate school applicants--to be used as a basis for predicting future accomplishments of the same kind. To date, he has collected data from some 1000 graduate students in 16 institutions, representing the disciplines of electrical engineering, psychology, and English. The information obtained includes GRE aptitude scores, undergraduate grade point average, graduate school grades, peer ratings of creativity, specific tests of "creativity" in the subject matter area, and a biographical questionnaire, as well as an "independent activities questionnaire" designed to identify past creative accomplishments. The project is a long-term one, providing for follow-up on the students approximately five years after graduate school to determine the predictive validity of the measures being taken.

However, certain aspects of the work by Klein and by others on the topic of creativity tempt me to speculate that perhaps we are chasing a will-o-the-wisp. There may be no global characteristic to which we can properly apply the term "creativity." Klein himself suggests productivity, originality and independent thinking as components. The consistently low correlations between the various measures that purport to test the quality strongly support such an inference. It is possible that innovative, creative thinking is more content-restricted than we customarily suppose, and that an individual can be "creative" in areas of his life that are important to him, and quite conventional in others. The people in this room right now are a case in point. Each of you undoubtedly engages in original, non-algorithmic professional activities every working day, but your clothing is quite conventional, and so is your behavior as I observed it last evening--it conforms to the norms appropriate to the social situation. And this leads us back to the notion that perhaps creativity is a group of more narrowly defined factors, as are such concepts as "curiosity", "initiative" and "imagination." This line of thinking might prompt you to throw up your hands in despair, or to simply wait until Klein and the other workers in the field solve the problem. I suggest that either decision is unwise, and that you are in a unique position to take progressive steps to improve admissions procedures. The first attempts will, of necessity, be a kind of bootstrap operation, but they can be refined with increased experience.

What is needed first is the pattern that is most closely associated with successful graduate work in each department. This can be obtained by having each faculty member rate the importance of each attribute for this outcome. Additional useful information can be obtained by having current graduate students make the same kinds of ratings. The average ratings will then constitute a list of attributes ranked in order of perceived functional importance for obtaining a Ph.D. in that department.

The next step is to determine the degree to which the applicant's hierarchy of strengths and weaknesses matches the departmental rank ordering of desired attributes. One way of obtaining this information is from the applicant's instructors. To neutralize somewhat the ubiquitous halo effect, the data can be collected in such form that each respondent supplies an ordering of the attributes in question. There are several ways of doing this, one of the most convenient being the use of "constant-sum" judgments. In addition, rather than allowing the applicant complete freedom to choose his references, it would seem useful to specify certain classes of instructors from whom information is desired, such as lab instructors, teachers of seminars in the student's major content area, or instructors of courses in which student efforts are directed toward the production of a comprehensive paper of some sort, or from someone for whom he has been a research assistant. The whole aim here is to obtain information that is most directly relevant to the conditions and demands of graduate study. In other words, you explore those undergraduate performances that are most like that part of graduate work that presents the real problems.

Why do I make these suggestions to a group of graduate deans? Because most department faculties have neither the training nor the inclination to go about such a task systematically. Hence the provision through the graduate dean's office of the technical--and sometimes clerical--assistance that is required is by far the most efficient way of carrying out such a scheme. Secondly, only from the dean's office are patterns across departments likely to be seen, contributing to a functional institutional identity. Third, only through some such central agency is there likely to be the follow-up that is necessary to explore the idea fully and to evaluate its overall utility.

I have urged you to seek maximum congruence between the nature of the input to our system, as represented by the qualities of the newly admitted student, and the output--the qualities of the Ph.D. recipient. Let us turn our attention to the competencies of the young scholar-teacher upon whom we confer our advanced degrees. Have we adequately prepared him for his role as both scholar and teacher? After receiving the Ph.D., about 50 per cent of them engage in some college teaching--ranging from about 25 per cent in chemistry to virtually 100 per cent in history and English. In addition, some 80 to 90 per cent of them participate in undergraduate instruction during their graduate student career. If the goal of our graduate institutions is indeed the scholar-teacher, it seems to me that this implies more attention to the teaching assistantship than is usually the case--attention that will give it the status of professional preparation rather than a form of drudgery that gains nothing but a stipend.

Obviously, I am referring to the desirability of some training in teaching--training that is practical, efficient and adequate. How much and what kind of training? Any one of you who is even reasonably familiar with the literature on this topic knows that a variety of training schemes has been reported, ranging from formal courses to master-apprentice arrangements to heavy reliance on feedback through the use of video-tapes. And they all appear to be equally effective, if one accepts as the criterion the reactions of the participants. I maintain that the ultimate criterion of successful teaching is not the personal opinion of the trainee or the teacher but the academic achievement of his students. That kind of data is almost never reported. Hence, I would suggest we do not have any really reliable basis for choosing a particular form of training. Through my involvement in the Michigan College Teacher Training Program, I am trying to orient department personnel, both faculty and graduate student, toward evaluating teaching and training programs in terms of predetermined objectives, but I'm afraid I can't claim any smashing success to date.

On the basis of a rather extensive national survey I conducted three years ago, and two years experience in the Michigan program, I would like to make a few observations that seem warranted:

1. Graduate students tend not to view seriously a training program in college teaching that does not receive the clear and active commitment of those high in the power structure of the university. If students perceive, albeit unspoken, messages from their professional models that the only worthwhile goal is that of individual scholarship and/or research, they cannot be expected to devote much time or energy to the business of becoming effective teachers. Hence it is highly desirable that clear and unequivocal support for training programs be given at College and University levels. The message is clearest when there is a continuing commitment of time and effort, such as a regular series of cross-departmental "workshops on college teaching," staffed through the auspices of the administration, designed for all beginning teaching assistants, and with appropriate stipends for the participants. In this connection I would recommend for your consideration the Teaching-Research Fellowship program at the University of Iowa, and the Teaching Assistant Workshop only recently instituted by Vice-President Monson at Utah. I consider both of these to be pioneering efforts. They provide leadership where it is sorely needed. I'm afraid our departments will not provide it.

2. Departments occasionally accept so-called "training" funds and use them simply as additional support for graduate students, unless there are some constraints powerful enough to influence their behavior in other directions. I find positive responses to the idea of giving some serious attention to teaching at both the administrative and graduate student level--the resistances are centered in content-and research-oriented departments. I suggest the need for some kind of administrative requirement of evidence that training is being provided and that the trainee's performance makes a difference in departmental administrative decisions affecting him.

3. The beginning formal structure of a training program is less important than the incorporation of a mechanism for regular, objective self-evaluation, as independent as possible from the personal involvement of the program's designers and participants. Such a mechanism will foster the evolution of the most appropriate system for the academic unit. However, in order to carry out the kind of rigorous assessment that is really needed, an agency staffed by people particularly skilled in such activities is probably required. The range of responsibility of this agency should be university-wide, and it should conduct its work in close cooperation with the various departments and schools. Most academicians have neither the time, inclination nor talent for such work.

Now let me turn to my third topic--that of the evaluation of teaching. It seems to me that we do not take seriously the notion that we can--and should--have some clear and specific objectives in mind when we teach. I do not understand why we do not bring to our teaching the rigor we find so appropriate to our scholarly work. I can only explain this discrepancy by observing that we appear to use one set of criteria--involving a clear statement of our goals, systematic efforts aimed at the achievement of those goals and the assessment of results in the light of the goals--when we approach research or other scholarly problems--and an entirely different set which has historically been related to the business of teaching. The mystique has been built up that the outcomes of teaching are unmeasureable--or that they are aimed at some long-range goal, rather than performance on a test of some sort at the end of the semester. This last argument is usually taken to excuse the teacher from the necessity for asking himself whether he is really having an effect. I would like to suggest that it is entirely possible to be much more systematic about our teaching and its results than we usually are.

It seems to me that teaching must be taken to include as an explicit goal the inducement of some kind of change in another person--a change in skills, knowledges, competencies, or attitudes. If this is accepted, then the measure of our success in teaching is the degree to which these changes have taken place.

It should be clear that I am not referring to simple factual memory when I talk about specified outcomes. Some of the kinds of goals I have dealt with personally are: (1) "thinking like a lawyer"--our Law School is considering curricular reform and is asking itself whether the basic objective of the whole professional preparation might be stated most simply in these terms. (2) "The nursing attitude"--a very important ingredient that receives much attention in our School of Nursing. I was somewhat surprised to find that the Nursing faculty agrees rather well on what constitutes manifestations of this attitude--in other words, they are talking about a real identifiable phenomenon. (3) "The feel of mechanical engineering problems"--at first I was surprised to find pragmatic, practical engineers talking in such terms about the objectives of a course in "strength of materials". But I found that, despite the rather vague language, they can spot quite well evidences of the particular quality desired. Upon exploration, I found that the term carries with it certain specific implications--mostly about the student's mode of working on problems, rather than on the results. (4) Some of our English teachers who are teaching a Great Books course want students to be able to integrate the notions, concepts and thoughts encountered in the readings into their daily lives. I made some suggestions to them about how one might test whether the students do indeed acquire this ability. (5) I have been concerned with how one could identify the specific ways in which one's appreciation and understanding of Shakespeare are enhanced by actually seeing the plays rather than simply reading them. These are some of the kinds of outcomes to which I propose we can apply more rigorous evaluation than is customarily the case.

I would have you also note that the foregoing list of desired instructional outcomes is stated in what amounts to psychological terms--terms involving a stipulation of what the student does with the subject matter content to which he is exposed. This is in distinct contrast to the kind of thing we see in syllabi--which are universally stated in terms of subdivisions of content, completely ignoring the crucial question of how one is to use the information.

I would suggest that it is appropriate to treat such objective statements as though they were postulates of a theory. Just as we never directly test a theory--because it is stated so abstractly that direct test is impossible--so we should not expect to test objectives such as I have mentioned above. In both cases--in working from theory, or from instructional objectives--we derive implications which are testable. This variant of the scientific method allows us to deal in more systematic and rigorous terms with broad-scale educational objectives, and to determine the degree to which we are successful in achieving them.

In summary, I have urged you to look at educational activities in terms of desired outcomes, and have argued that this procedure is applicable to the problem of reducing the attrition rate of graduate studies through more efficient and valid admissions processes, to the problem of training graduate students to become effective college teachers, and to the evaluation of teaching. We can do it, and it is time we did. But leadership is needed--and our individual content-oriented departments are unlikely to supply it.

FINANCIAL SUPPORT OF GRADUATE STUDENTS

Charles E. Falk
Planning Director
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Introduction

The participants of this workshop deal, probably on an almost daily basis, with the operational aspects of graduate student support. Thus, it would be futile for me to cover specific operational mechanisms of the various processes or to discuss operational details. Rather I would like to use this relatively short time to review from a broad national point of view the various objectives of graduate student support programs, to present to you some data which will illustrate the extent and depth of graduate student support by field, mechanism and source and, finally, to raise some policy questions which hopefully will provide a basis for an in-depth discussion.

Objectives

Essentially the first question to be dealt with in any consideration of graduate student support is that of why such support is needed at all. Generally a number of reasons are given. Probably the most important one today is to enable the best students to initiate and complete graduate study programs. This objective is based on a national goal, which is receiving increasing general acceptance, to create the possibility for every individual of our society to obtain the maximum education consistent with his capabilities. Another reason for this particular objective is a rather obvious one, namely that it is to our own self-interest as a Nation to have the products of our graduate schools be of the highest quality so that their contribution to our welfare can be maximized.

A related objective is of a purely quantitative nature, to stimulate larger numbers of students to embark on graduate studies. Again, the two reasons mentioned for the prior quality objective are applicable, namely to provide maximal opportunity for education and to increase the average educational level of our total population. The latter is based on the assumption that such a trend would be clearly in the best national interest and would improve our social, economic and cultural welfare.

Another objective relates to the efficiency of our manpower production process and aims at making it possible for graduate students to complete their studies as expeditiously as possible. This, of course, is accomplished best in the case of fellowships or traineeships where support is not contingent on any particular services performed by the graduate student.

Finally, there is the objective of stimulating students to enter specific fields of studies in order to alleviate existing or expected shortages of manpower trained in these fields.

The list of objectives just enumerated constitutes the prime reasons generally presented in support of graduate student financial assistance. There are, of course, also a number of secondary, yet still important, objectives. Graduate students are supported to assist universities to carry out some of their functions. We have teaching assistants to assist in the instructional process and research assistants to help in the development of knowledge. It is, of course, realized that both activities can play an important part in the professional development of students. One of the reasons the Federal Government supports graduate students through the mechanism of traineeships is to stimulate development of high quality universities on a more diffused geographic basis. Another secondary purpose, especially of fellowships, is to identify and encourage talent through public recognition.

Very seldom is any specific graduate student support mechanism based on only one of these objectives. Rather, mechanisms are designed to fulfill one prime objective with the clear recognition that other objectives are also achieved.

Sources and Extent of Financial Support of Graduate Students

Surprising as it may seem, there exist relatively little recent data to provide an overall national picture of graduate student support covering all fields of study and all types of support mechanisms. As a matter of fact, to the best of my knowledge, the only relatively recent data that cover the total graduate student universe were developed in a 1965 study which was carried out by the Office of Education.[1] Figure 1 shows the sources of funds used to finance the graduate study of all full time students in all fields in the spring of 1965. The information was based on a survey of a sample of 7,000 full time graduate students representing roughly 3 per cent of the total full time enrollment. As can be seen, 42 percent of financial support of graduate students was provided from fellow- and traineeships as well as teaching and research assistantships. Out of the approximately 60 per cent of "other" support, only 6 per cent was derived from other external means that could be classified as financial aid, such as: scholarships, faculty appointment, and NDEA or university loans. The principal portion of the "other" component was derived from general employment, parents' financial support, savings, etc. Thus, approximately one half of graduate study financing was accomplished through established programs of "external" financial assistance, i.e., not from personal or family income.

More recent data on graduate student support are available in the areas of science and engineering. This information has been collected since 1966 by the National Science Foundation from data provided by universities applying for traineeship grants.[2] Some data for the academic year 1968-69 are shown in Figure 2. They are based on information covering all students in about 3200 doctorate granting departments. The only data not included are those dealing with students in medical/clinical fields. On the basis of other sources of information, we believe that these data cover more than 90 per cent of all graduate students who eventually obtain doctorates in science and engineering. Incidentally, similar information is available for students in masters granting departments of these doctorate granting universities; however, this coverage is obviously not nearly as complete as that of doctorates since the departments in non-doctorate granting universities are not included.

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[1] The Academic and Financial Status of Graduate Students, J. Scott Hunter, H.E.W., O.E., Superintendent of Documents Cat. No. FS 5.254:54042.

[2] Graduate Student Support and Manpower Resources in Graduate Science Education, Fall 1965 and Fall 1966, NSF 68-13.

As can be seen, most of these students, approximately 80 per cent, obtain their major support from fellowships, traineeships, research and teaching assistantships. These data relating to the number of students supported in science and engineering should not be compared with the data in Figure 1 which deal with amount of support in all fields of study. Somewhat less than half of these students receive their primary support from the Federal Government, principally through the fellow- and teaching assistantships. These data relating to the number of students supported in science and engineering should not be compared with the data in Figure 1 which deal with amount of support in all fields of study. Somewhat less than half of these students receive their primary support from the Federal Government, principally through the fellow- and traineeship and research assistantship route. Thus, the Government provides the major source of support for approximately 40 per cent of all full time science and engineering students.

It is also important to analyze graduate student support by fields of study to detect existing imbalances. Data by field, in the area of science and engineering, are shown in Figure 3. As is evident, students in the social sciences receive the least amount of "external" support (68%), while those in the physical sciences receive their principal support (89%) through such mechanisms. The difference in these distributions are caused by a variety of factors. Research assistant support shows wide variation by field and is relatively low in social sciences (12%) and mathematics (9%) for, at least, two reasons. Only a few agencies supply significant amounts of Federal research funds to these fields and the use of research assistants is not too prevalent in these scientific disciplines. Teaching assistantships, since they are provided by the universities, could provide a balance function to counteract mission interest reflected in research assistantships. But they do not seem to fulfill this function. However, it is realized that teaching assignments are constrained by factors outside the control of the university. Thus, they must depend on the magnitude of undergraduate teaching loads which are especially heavy in core subjects taken by many undergraduate students. However, it is highly questionable whether this factor can account for the relatively low fraction of students supported through this mechanism in the social sciences (19%); however, this phenomenon is undoubtedly partially responsible for the low proportion in engineering teaching assistantship support (13%). Fellowships and traineeships constitute the other possible balance mechanism. While they do not show inter-field variations anywhere as large as those evident in assistantships, they also do not seem to really make up for inequities produced by these other mechanisms. This is somewhat surprising since almost 70 per cent of fellow- and traineeships are financed by the Government and of these about one half (NDEA and NSF) leave the assignment to fields of science or study up to the university. Granted the NDEA awards may well go to non-science areas in view of the relatively low student support available from other Governmental sources.

In one area of Federal support more comprehensive longitudinal data are available, namely for fellow- and traineeships. Figure 4 shows the percentage of full time graduate students supported by fellow- and traineeships by field of study and over a period of 9 years. This information was accumulated by the Federal Interagency Committee on Education (FICE).[1] On an overall basis, it is evident that the total percentage of full time graduate students supported through fellow- and traineeships has risen rather spectacularly from 4.4 per cent in 1960 to 13 per cent in 1968. As can be noted, support to social sciences students is again relatively low. This is undoubtedly due to the fact that only a few agencies provide fellowships in these areas, while, for example, in the physical sciences a much larger number of agencies provide this type of support. However, I would like to note that even when selection is made by universities themselves, such as is the case with NSF traineeships, the faction of awards made to social sciences students is relatively smaller--16 per cent of all traineeships as compared to a .3 ratio of social science to total full time graduate enrollment. One should also note the rather spectacular increase in the number of awards in the area of education. This, of course, can be attributed to the recent increases in Office of Education awards.

Policy Issues

Having briefly reviewed the objectives, distribution and extent of graduate student support, a number of policy questions become clearly evident:

1. Overencouragement towards Graduate Education.

A relatively large portion of graduate student expenses are supplied through external sources, i.e., not from family or personal income. Furthermore, a large number of graduate students receive external financial assistance. Are we, through this process of financial aid, stimulating excessive growth of graduate enrollment to the extent that all the products of graduate schools cannot be used effectively by society? This is a very difficult question to answer on a general basis. However, it may be safe to state that, in a relatively affluent society such as ours, increases in average educational level of the population can only lead to overall national benefits. It is true that masters and doctorates in some fields may at some point have difficulties in obtaining jobs that utilize all of their specialized training. However, there are several factors which prevent this difficulty from persisting over any extensive period of time. In the first place, by definition, students entering graduate school represent the more intelligent sector of our population and will very early in their academic life respond in their choice of field to the demands of the labor market. The second factor is the rather remarkable mobility of graduate school products made possible by the rather open and flexible character of American culture and the willingness of both graduates and employers to accept inter-field and inter-activity mobility. However, it is important for the graduate schools to prepare their students for careers which are not too specialized. Otherwise, this mobility, both from the point of view of student aspiration and from the training point of view, could disappear.

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[1] Report of the Task Force on Fellowships and Traineeships, FICE, June 1968.

2. Dilution of Graduate Student Quality

As is evident from the pattern of support mechanisms discussed previously, a considerable number of graduate students receive financial support for teaching and research services. Is there any danger that, in order to satisfy demands for these services, graduate schools are lowering their standards of quality to a point that might not be to the best interest either of graduate education or society?

3. Primary Purpose of Graduate Student Support

Should the primary purpose of all graduate student support be to facilitate completion of graduate study in the student's choice of field? As mentioned previously, there are a number of objectives which generally apply to any specific mechanism of graduate student support. However, should this particular objective be given maximum weight in determining methods and mechanisms of graduate support?

4. Relation between Financial Need and Graduate Student Support

Should graduate student support be extended only in cases of demonstrated financial need? Implicit in this question is the assumption that the financial need is that of the graduate student's family. Thus, the question is raised as to whether the parents of students should accept financial responsibility for education beyond undergraduate school. What is so magic about this cut-off?

5. Loans vs. Trainee- and Fellowships

In certain types of graduate student support mechanisms, i.e., fellowship and traineeship, the main objective is to enable the ablest students to obtain the best education and to complete their graduate studies as rapidly as possible. All of this comes down to a question of financial ability to pay for a graduate education. If this is the crux of the problem, could it not be equally well solved through the mechanism of loans? Various loan proposals have been made in recent years which would spread the repayment of loans over the working life of individuals tied to their rate of income. Under these circumstances society at large would not have to assume the cost of this type of direct student support. Are there fundamental reasons why loan mechanisms should not be substituted for fellowships and traineeships?

6. Distribution of Graduate Student Support by Field of Study

Should the same fraction of students be supported in each field of study? If so, what can universities or governments do to achieve this?

7. Route of Support

Should the selection of direct support recipients be made by the organizational source of funds, i.e., Federal or state government, private donor, etc., or should such funds be allocated to individual universities for distribution to students selected by the university? The first mechanism would create more competition between universities for good graduate students and thus provide an incentive for the development of institutional quality, as well as provide students with the freedom to choose their graduate school. The second mechanism would provide the means for spreading the number of graduate students over wider geographical areas and possibly over a larger number of institutions.

8. Increasing the Supply of Advanced Degree Holders in a Particular Field

Should graduate student support be used to attract students into particular fields or areas of study, or can the marketplace provide sufficiently fast feedback to regulate the supply and demand situation? Decisions regarding major field of study are generally made in undergraduate school and may well be motivated by assurance of financial assistance for graduate studies. Since there is a 6-10 year span between the time of decision and Ph.D. award, it seems likely that the marketplace feedback will be too slow.

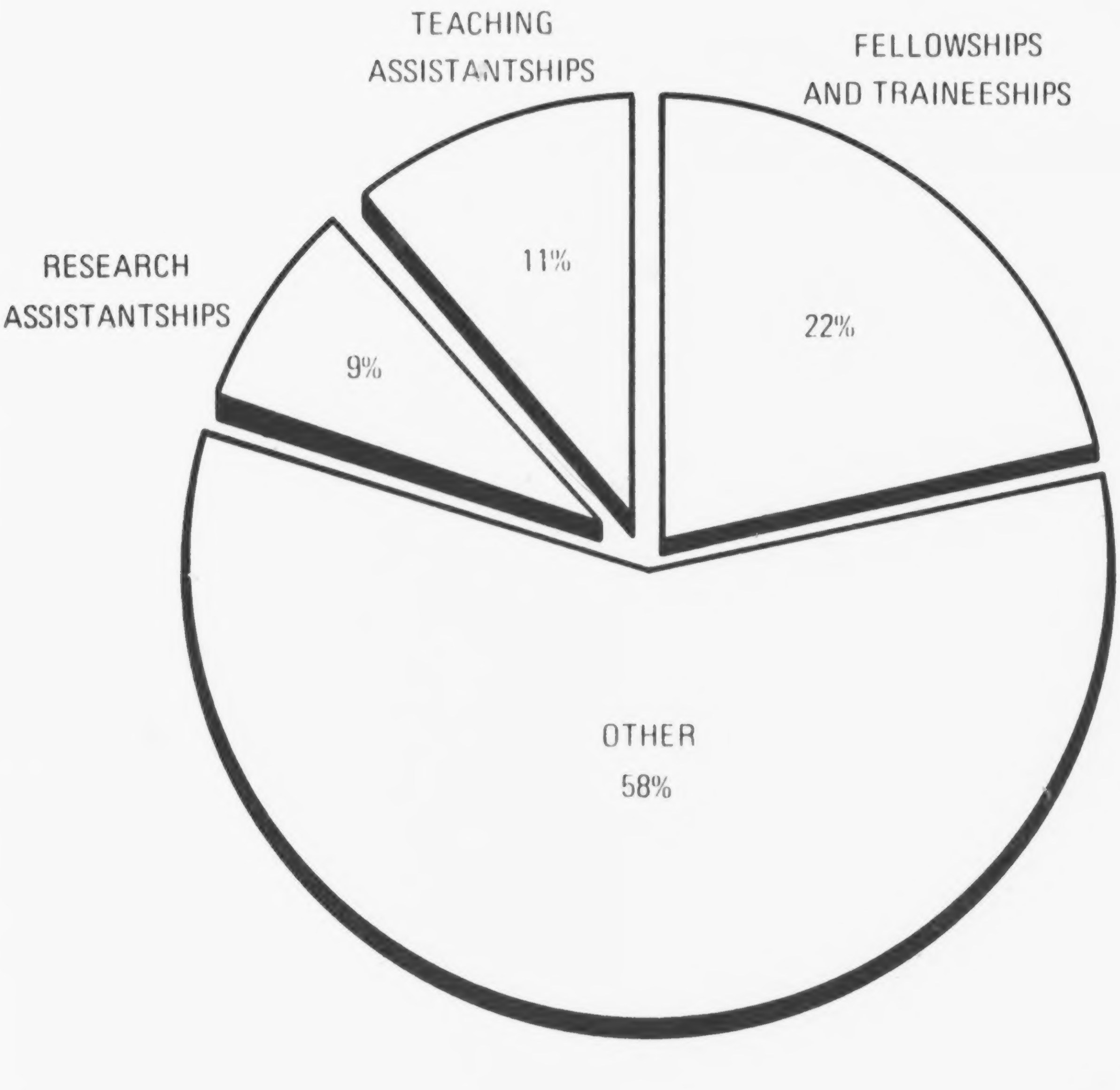
9. Chronological Patterns of Various Support Mechanisms Made Available to Students

From an educational point of view is the present pattern of types of support made available to students in their best interest or are these patterns adjusted to the service interests of universities? For example, should first year graduate students really be the principal recipients of teaching assistantships?

FIGURE 1

SOURCES OF FUNDS USED TO FINANCE GRADUATE STUDY OF FULL-TIME STUDENTS ALL FIELDS

Spring 1965



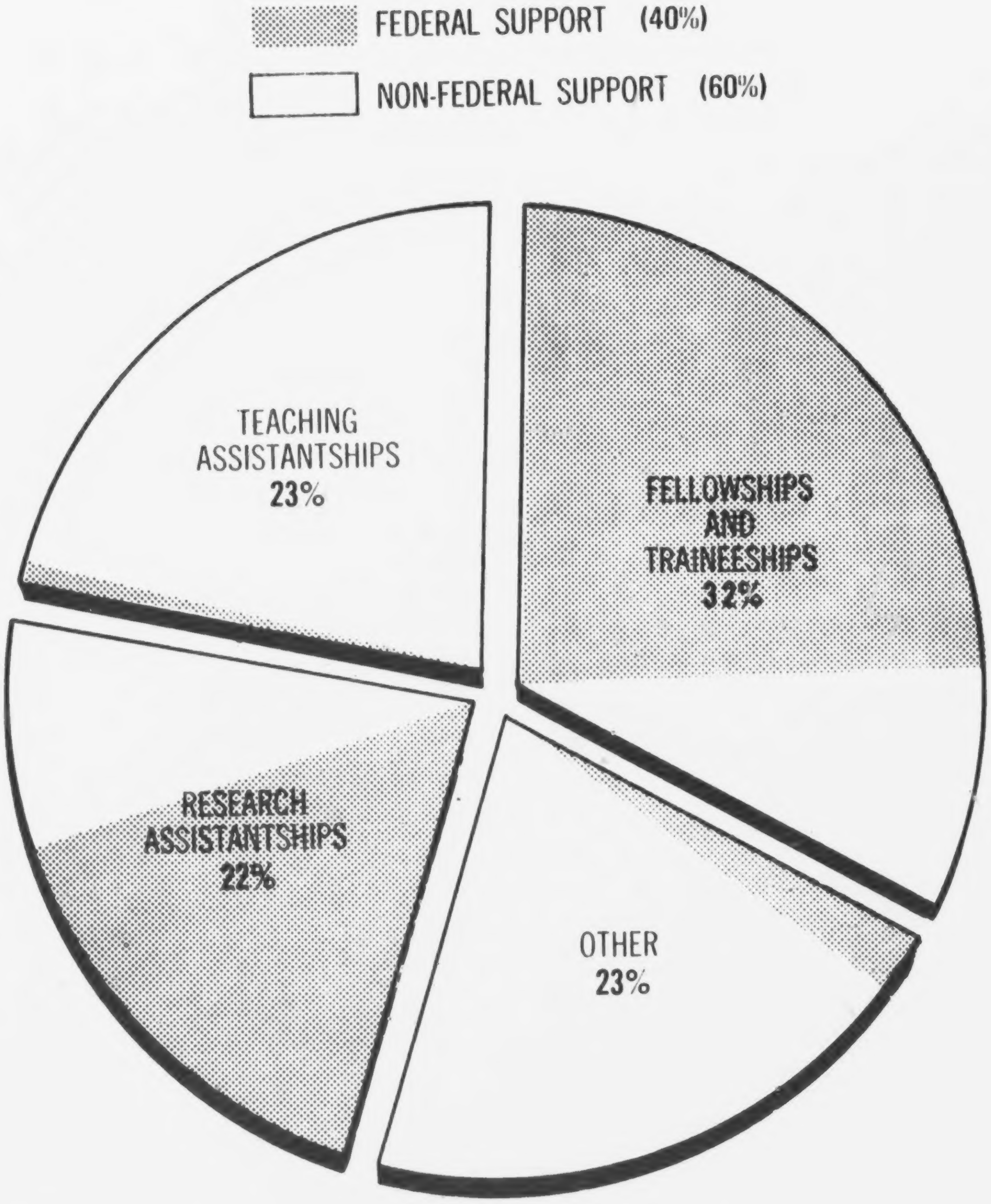
Note: Based on a sample of 7,000 graduate students (3 percent of all students enrolled for advanced degrees)

Source: The Academic & Financial Status of Graduate Students, Spring 1965; Department of Health, Education, and Welfare.

Figure 2

MAJOR SOURCES OF SUPPORT OF FULL-TIME GRADUATE STUDENTS IN DOCTORATE GRANTING SCIENCE AND ENGINEERING DEPARTMENTS

1968



TOTAL NUMBER OF FULL-TIME GRADUATE STUDENTS—134,913

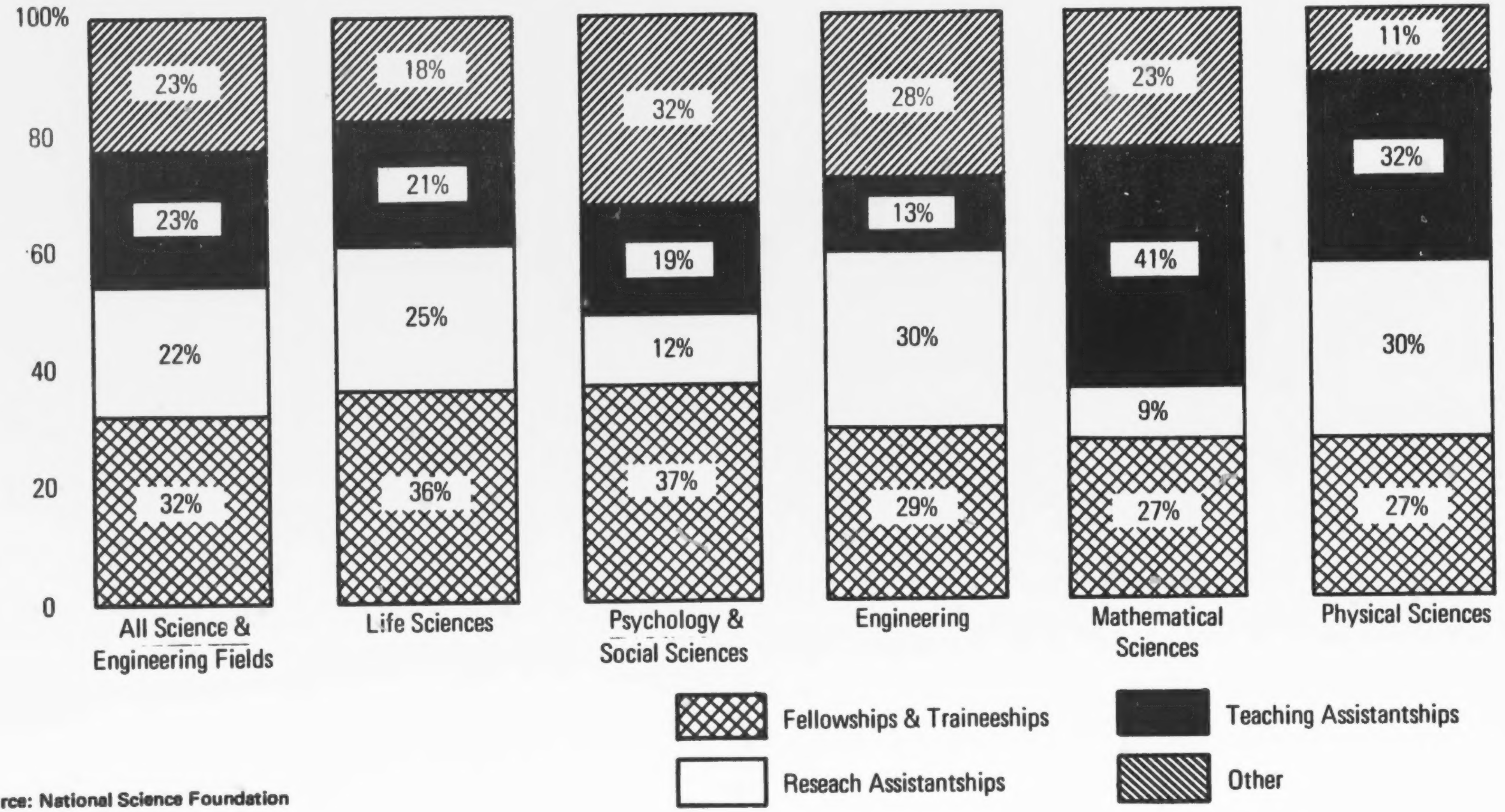
SOURCE: National Science Foundation.

Figure 3

SOURCES OF GRADUATE STUDENT SUPPORT, BY FIELD OF SCIENCE

Doctorate Granting Departments
Full-Time Graduate Students

Fall 1968



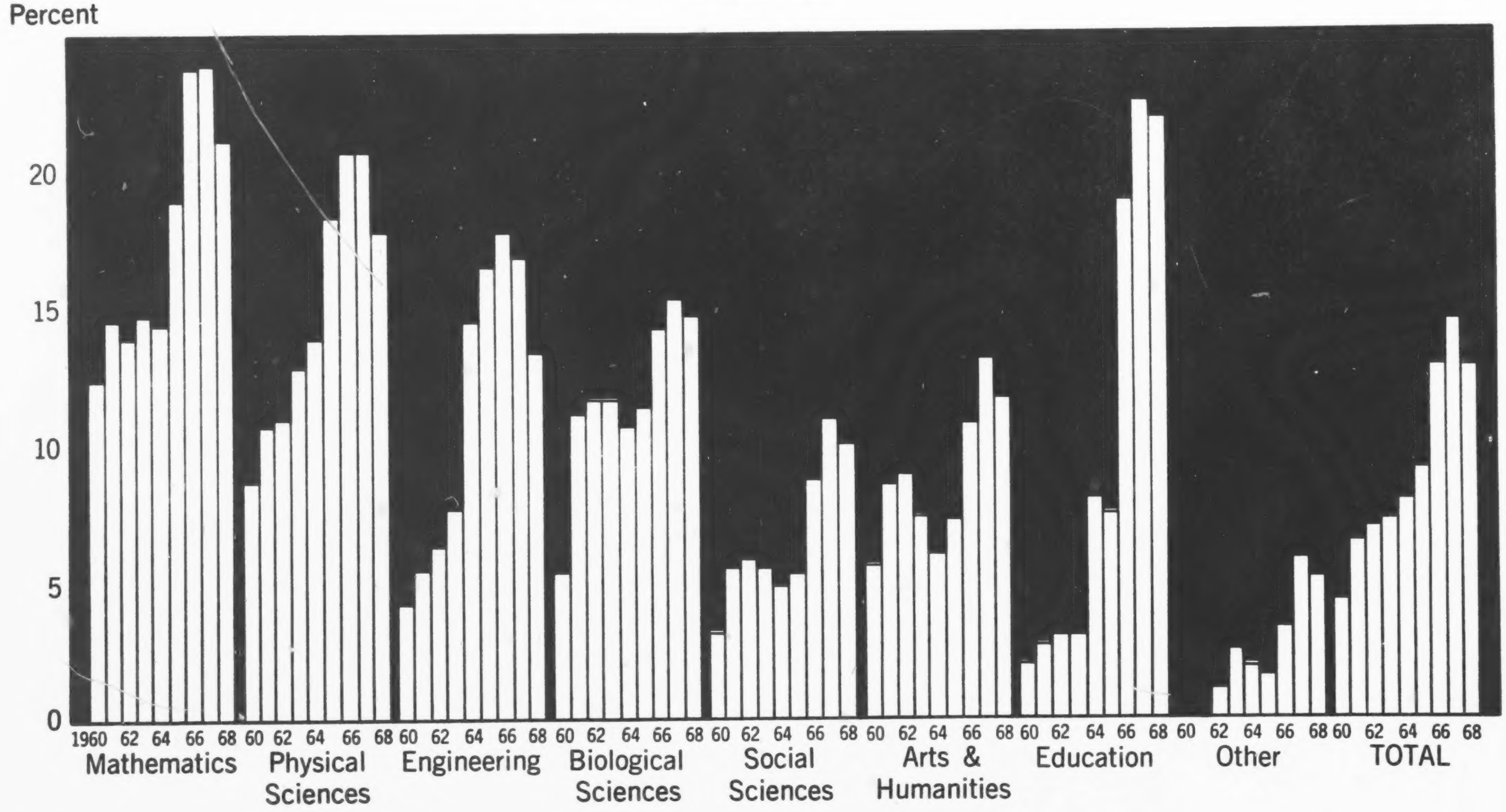
Source: National Science Foundation

Figure 4

PERCENT OF FULL-TIME GRADUATE ENROLLMENT
SUPPORTED THROUGH FELLOWSHIPS AND TRAINEESHIPS

All Agencies, By Field

Fall 1960-1968



SOURCE: Federal Interagency Committee on Education.

THE DISADVANTAGED STUDENT IN GRADUATE SCHOOL

Preston Valien
Acting Associate Commissioner for Higher Education
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I am pleased to be with you today to discuss a subject which relates very directly to many of the primary issues that are swirling around the social revolution of the late 1960's. Perhaps one of the most important aspects of the historically repressed minority groups' recent drive for cultural identity and a piece of the economic action is the demand for fully equal opportunity in the area of higher education. In a society that is becoming increasingly complex in both the technological and social spheres, graduate and professional education is no longer seen as a luxury for the few, but as a necessity for the many. It is, and ought to be, especially important for the young people of these minority groups that are emerging from a long period of eclipse within the context of the larger American society.

I was asked to speak today on the topic: "The Disadvantaged Student in Graduate School." After several years of fast and free useage, the meaning of this catch-word as it pertains to potential undergraduate students is rather widely understood. While it also includes deprived white youth, it generally describes a youngster of minority group extraction--Afro-American, Spanish-American, or American Indian--who has grown up in circumstances that have suppressed rather than encouraged his potential for intellectual growth. More often than not this young man or woman has always lived in a minority sub-culture perpetuated by the inexorable forces of racial and economic segregation, and received a secondary school education that is inadequate in many respects. Understandably, such a youth is likely to view higher education as an unrealistic personal option.

It is only in recent years that colleges and universities have begun to bring to this kind of youngster an unexpected opportunity for educational development at the post-secondary level. With the assistance of financial aid, special academic preparation programs, tutorials, counseling, and other supportive services, he may be enabled to perform creditably and graduate at the end of four years with roughly the same skills as his classmates from more advantaged backgrounds.

Given the temper of the times and the Graduate Schools' newly felt sense of social responsibility, he will probably encounter little difficulty in being admitted to a program of post-baccalaureate studies. He is, in fact, no longer disadvantaged in the original sense of the term. Nevertheless, unless he has made an unusually good record as a student it is unlikely that he will be able to compete directly with the academically excellent student for the limited supply of fellowship support which the university has to offer. Since his economic resources are probably such that he will not be able to attend without substantial financial assistance, his opportunity for pursuing a graduate education may prove to be largely illusory. This type of graduate student, then, is still disadvantaged, but only with respect to his potential for financing a program of study.

There is, however, another type of prospective graduate student whose "disadvantage" has both financial and academic aspects. I am referring here primarily to the student from a small, developing institution, usually a predominantly black college which has been struggling for its very survival in isolation from the mainstream of American higher education. Even if this young man or woman has excelled among his peers during four years of undergraduate education, it is unlikely that he will be prepared academically for admission into a graduate school of the first or second rank. In this case, his opportunity for pursing a graduate education is not illusory, it is actually non-existent.

Given the limited opportunities for minority group students to pursue graduate education, let us inquire for a moment into the potential demand. In other words, to what extent do such students aspire to pursue a post-baccalaureate program? A study by Joseph H. Fichter entitled "Graduates of Predominantly Negro Colleges--Class of 1964" provides some interesting answers. Consistent with previous findings, the Fichter study shows that as college freshmen a much higher proportion of Negroes than whites plan to enter graduate schools. By the time they are seniors, the proportions within each group are approximately the same. When we compare the actual rates of entrance, however, Negroes fall significantly below their white fellow graduates. Fichter accounts for this dramatic fall-off by citing the same three factors we mentioned earlier--lack of opportunity, insufficient financial support, and inadequate training.

The failure of the American graduate education to help the young black student achieve his aspiration is well illustrated by a simple cold fact recently reported by the CGS Committee on Disadvantaged Students: "Of approximately 40,000 Ph.D.'s awarded in this country over the past five years, only 300 (or less than one percent) were awarded to black Americans." In 1967-68, 31 State colleges and universities awarded 25,000 graduate and professional degrees, and Negroes received approximately 300 (1.2 percent). Other minority groups--Mexican-American, Puerto Rican, and American Indian--show even lower rates of access to and completion of post-baccalaureate studies.

Nor is the record of one section of the country substantially better than that of any other. John Egerton's recent study entitled "State Universities and Black Americans" compared the percentage of black graduate and professional enrollment in predominantly white State universities and land-grant colleges in the South, East, Midwest, and West. He found that the South and East were exactly tied at 1.69 per cent, the West trailed with 1.13 per cent, while the Midwest led the field with 2.85 per cent.

A Ford Foundation survey of a selected group of public and private graduate schools of arts and sciences in 1967-68 showed that black Americans made up 1.72 per cent of the total enrollment and 0.78 per cent of all Ph.D.'s since 1964 went to Negroes.

Of 80 predominantly white institutions, Egerton found that less than 1 per cent of the faculty was black in 76 institutions which reported approximately 600 blacks out of 100,000 faculty members.

The group of predominantly Negro institutions in the southern and border states cannot be expected to take up the slack, for it is composed chiefly of four-year undergraduate colleges. A few have graduate schools, but only three of them offer the doctor's degree, and two offer the doctorate only in selected fields. Furthermore, as the Fichter study points out, the master's degree programs offered by predominantly Negro colleges tend to focus much more on teacher preparation than on advanced study and research in subject fields.

It might now be instructive to inquire in which discipline those few minority students who do make it to graduate school wish to study. In his presentation before this year's CGS annual meeting, Mr. Donald Carlisle cited some interesting statistics from UCLA's ethnic survey conducted in the fall quarter of 1968. Minority group students--black, Mexican-American, and American Indian--were greatly over-represented in the social sciences (26 per cent to 19 per cent of total graduate distribution), under-represented in the physical and life sciences (12 per cent to 18 per cent), about even in the health sciences and humanities and, except for education, under-represented in the professions. With some minor exceptions, the data agrees with the findings of the Fichter study cited earlier, which showed that much lower proportions of male Negroes than of male whites plan to undertake graduate study in the fields of business, engineering, and law.

The career choices of minority group students--much more than those of their white classmates--are conditioned by considerations of perceived opportunity. Traditionally, the professional fields which have been most open to minority group students--particularly in the South--have been education (that is, teaching) and perhaps social work. We are all aware that, until recently, there was virtually no opportunity for black graduates to enter the mainstream of American business, as executives, engineers, or entrepreneurs; and, except for the South, where black clients were relatively plentiful, little opportunity existed in such professions as medicine and law. A recent survey of black professionals in the State of New Jersey, for example, produced these estimates: 60 lawyers, 50 to 75 engineers, 175 doctors, and fewer than 100 dentists. Compare these figures with the total black population in New Jersey of well over 600,000, and we can see how far the Nation has to go to provide equal opportunity in graduate and professional education.

Now that we have a tentative definition of what the term "disadvantaged" student means in the context of graduate school, some notion about minority aspirations, and the sure knowledge that up to now the graduate schools have not measured up to the challenge, let's look at some possibilities for constructive action.

There are already in operation some relatively small-scale programs for remedying the academic deficiencies of prospective graduate school students from small, predominantly Negro colleges. One approach is represented by the intensive summer studies program (ISSP) jointly funded in 1966 by Harvard, Yale, and Columbia universities. As described by Harold Stahmer at the recent CGS annual meeting, the program was created to recruit and prepare students from predominantly black and selected white colleges for graduate study in the arts and sciences, law, medicine and other selected fields.

ISSP operates on the theory that, in order to be successful in a predominantly white graduate school, students from even the best black institutions need three things: development of their academic abilities, pre-exposure to a new cultural climate, and time to develop confidence in their ability to compete at the Nation's best graduate schools. The program aims to meet these requirements through a two or three year program of intensive summer studies tailored to the needs of individual students who are recommended by their home college and selected for participation by representatives of Harvard, Yale, and Columbia. A typical student might enter the program during the summer after his sophomore year and return for one or two additional summers, depending on his progress in overcoming recognized deficiencies in his academic preparation for graduate school.

The Post-Baccalaureate Fellowship Program represents another approach to the problem of inadequate academic preparation. In the words of William Cadbury, its director, the program "provides an opportunity for selected students to spend an academic year after graduation studying at one of a small group of highly demanding liberal arts colleges, to supplement their undergraduate education before they enter graduate or professional school." Recruiting for the program is carried on primarily in predominantly Negro colleges in the South, and successful candidates are enrolled in regular courses in such high quality colleges as Haverford, Bryn Mawr, and Swarthmore. The post-baccalaureate year's program is individually tailored to suit the special remedial needs of each student, quite aside from any consideration of degree requirements. It is understood that the degree sought is a Ph.D. or professional degree, to be earned later at another institution. During his post-baccalaureate year, however, the student is given help in securing admission to a graduate program at a university that will be able to meet his academic and financial needs. It is significant to note that out of forty-five fellows seeking admission to graduate or professional programs in academic year 1967-68, forty-two were accepted.

A third type of compensatory program for prospective graduate students has been widely discussed but, at least to my knowledge, never implemented. The idea and philosophy is somewhat similar to that represented by the post-baccalaureate program I have just discussed. It differs, however, in that a graduate school itself would administer the program, instead of a four-year college which must place participants in other institutions after completion of the "fifth" or remedial year. Dean Elder, of the Harvard Graduate School of Arts and Sciences, is one who sees certain advantages in this variant of the post-baccalaureate year concept. He points out that the few minority students who have been admitted to graduate programs at his institution have been asked to "sink or swim" in an extremely demanding environment. Many have sunk because the institution has never provided lessons in swimming. It would appear that the Graduate School itself would be in an excellent position to construct a post-baccalaureate year program uniquely designed to prepare students to meet its own requirements. Those fellows whose needs might be better served elsewhere could be assisted in gaining admission to appropriate graduate schools across the country.

There have been persuasive arguments advanced on behalf of each of the two major models for preparing "disadvantaged" minority group students for entrance into graduate education. Proponents of the intensive summer studies approach point to the fact that participating students are acclimated over a period of years to the more demanding academic environment they will face in graduate school. Perhaps more important, it is said, the summer program allows the student to enter graduate school directly upon receiving his undergraduate degree, thus avoiding the stigma of having to undergo a highly visible "fifth year" of remedial preparation.

Advocates of the post-baccalaureate year approach feel strongly that the summer programs are too sporadic to be maximally effective. They claim that the post-baccalaureate fellows, far from feeling any stigma about their special status, are enthusiastic and proud of being selected for participation. The variant mentioned earlier, where the graduate school itself administers the post-baccalaureate program, may have some special appeal in this connection, especially if the participants can be admitted with some kind of provisional status contingent on their completing the post-baccalaureate year successfully.

It is, I think, fair to say that both of the existing models for academic preparation have some contribution to make to the common goal. We are still feeling our way in this area, and it is far too early to settle on one technique or another as the magic model that will finally assure the Nation's minority groups full participation in graduate education. Whatever efforts are presently underway should be modified in accord with the lessons of experience and, if possible, expanded to include more and more participants. What we have done so far, however commendable, represents only a small scale attack on a truly massive problem.

The major barrier to mounting a national effort of more meaningful proportions is the lack of available resources. Up to now, most of the special recruiting, preparation, and fellowship programs have been funded by forward-looking foundations. What is needed now is support of a magnitude that only the Federal Government can provide.

The new Special Services for Disadvantaged College Students program, enacted as part of the Higher Education Amendments of 1968, will hopefully go into operation during the current fiscal year. Unfortunately, the program authorization is so worded that graduate students are not eligible to participate in the various kinds of support programs that may be established with institutional grants. It may be possible, however, to use the program for preparing prospective graduate students in both academic year and summer programs while they are still undergraduates. The legislation for the Special Services for Disadvantaged College Students specifies that such programs may provide, among other things, for identification, encouragement, and counseling of disadvantaged students with a view to their undertaking a program of graduate or professional education.

In the area of financial support for disadvantaged students enrolled in graduate school, the present possibilities for Federal assistance are even more bleak. The NDEA Fellowship program, as we all know, was not primarily intended as a vehicle for equalizing educational opportunity at the graduate level. It was enacted to entice excellent students, as traditionally defined, into a career category which the Congress determined was crucial to the national welfare--college teaching. Like the NSF fellowships, which were designed to increase the national supply of highly trained scientists, this form of aid is granted without regard to financial need. We have tried to encourage institutions participating in the NDEA program to reserve some portion of their allocation for disadvantaged students who would generally not qualify under strict competitive standards. It must be recognized, however, that this represents at best only a stop-gap measure; the NDEA Fellowship program is not the most appropriate vehicle to increase opportunity for disadvantaged graduate students.

Nor can we look for any relief to the Educational Opportunity Grants program--a needs-test student-aid program which has given new hope to thousands of impoverished undergraduate students since its inception in 1966. Although the ever-popular National Defense Student Loan program and the College Work-Study program are both available to graduate, as well as undergraduate students, the EOG program--potentially the most relevant of the three--is explicitly limited to four years of undergraduate study. Upon recommendation of its Committee on Disadvantaged Students, the CGS annual meeting last December passed a resolution urging that the EOG program be extended to appropriate students for their graduate education. In my own view, this is a step in the right direction which merits careful consideration. This would involve, of course, the introduction of need as a factor in providing graduate assistance.

What is really needed, however, is a Federal Special Services program specifically directed at the disadvantaged graduate student--one that would be flexible enough to support a post-baccalaureate program, an intensive summer studies program, or any other promising arrangement for increasing the numbers of disadvantaged students in graduate and professional schools throughout the Nation. Most important, it should include authority for stipends, as well as for administration, curriculum development, and instruction. A comprehensive program of this kind would insure that institutions which are truly committed to increasing opportunity for graduate education could find--in one place--all the resources necessary to conduct an effective program.

There have been some discussions at the Office of Education about the possibility of seeking legislative authorization for such a program. Whether--and when--a new source of support will actually materialize remains to be seen. But I am confident that somehow the Nation will find a way to move with the great social forces that are pointing the way to truly equal educational opportunity for all its citizens. All of us here have something to contribute to this long overdue movement toward social justice. Let everyone pause long enough to define his own most useful role, and then join together with his fellows to move graduate education into the creatively pluralistic society that will be America in the latter part of the twentieth century.

GENERAL FEATURES OF GRADUATE DEGREE PROGRAMS

Sanford S. Elberg
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This opportunity which is so generously provided by the Council of Graduate Schools to review some features of graduate degree programs was entered into seriously on a Saturday afternoon very recently when the Deans of the Berkeley campus were gathering their forces to visit the Chancellor in order to encourage him against certain decisions of a personal nature the press had indicated he might be considering following a disastrously conservative meeting and decision of the Regents dealing with the issue of People's Parks. Chancellor Heyns made a statement that is filled with meaning and implication for all of us today in our own spheres of responsibility. He said, "I should not be placed in the position of being an adversary of the University community, but a leader." In a sense this is the theme which should prevail in any review of graduate programs. It is then a kind of "stock taking"--where are we today and in what directions and to what extent should we be moving.

The general features of any degree program cover the following stages in a student's history: admission to the graduate unit, acceptance into the degree program (which may be coincidental or subsequent to the admission into the institution), planning the student's program in consultation with faculty advisers, passing of certain "preliminary" or other examinations to determine whether after a year or two of work the student is indeed fitted to continue, sometimes acquiring the master's degree enroute to the doctorate as a kind of permission to proceed further, say, to the formal examinations for advancement to candidacy for the degree, and, hopefully, the performance of original or creative work leading to an acceptible thesis.

Each of the above steps is familiar to all, and each of them has probably a large number of variable conditions set upon it by each institution. In general, however, there are certain common things which serve as a thread through all institutions in America and these might be said to include the "residence requirement" for which I would especially recommend a recent pamphlet of the Graduate School of Louisiana State University, the lead article of which dealt with the meaning of "academic residence." It is one of the nicest and the most helpful expositions of this requirement to orient students as well as new faculty on the why's and wherefore's of residence that I have seen. Then there are the foreign language requirements. These have undergone major revision as even a cursory review of the last ten to fifteen years of the annual Proceedings of the Council of Graduate Schools and the American Association of Graduate Schools will reveal. Foreign language requirements have been liberally reformed so that there are in some schools a variety of ways in which competence in the language is appraised. Many of these have been in the best interest of the student and the time it takes him to accomplish this. Other changes have not been "reforms" but weakening of the doctoral programs in this area.

Traditionally doctoral committees were like Heaven--some were appointed to them, others were not. Today pressures for extending the privilege of serving in the graduate program are mounting, principally from members of the non-faculty research staff of demonstrated and high competence. This stems over the past twenty years from the growth of research funds into our institutions. It has been necessary in some research areas to enlarge the productivity of the research unit by employing very highly qualified persons to assist the faculty principal investigator in his research. Often these adjunct researchers carry a major segment of the responsibility although they themselves are not appointed to the regular faculty. I shall not go into the advantages and disadvantages involved in this type of employment for the instituion. In certain subjects, as the "hard" sciences, there is a core of exceedingly able persons who are interested and even highly desirous of assisting in the graduate program even though they do not have Senate or faculty appointment. These persons have been of great help to departments and they may give seminars and may serve in the category of Lecturers. They will take on graduate students under the general direction of the faculty member.

As this cadre of valuable and important members of the University community increases, they have felt that their services should be more formally recognized. Consequently requests and pressures to include them in the panels of people qualified to serve on the qualifying examination and on the thesis research committees have been felt. We have approached this problem by requesting the chairman of the department interested in such services to supply the Graduate Division with a complete vitae (as if the man were being recommended for appointment to the faculty) with all of the documentation that is usually provided to show his abilities and capacities. This material is evaluated as to which levels of committee such individuals might profitably serve; that is, whether at the master's level or at the doctoral level, and whether on examinations or thesis reading committees and indeed in certain cases, whether or not he may serve as chairman, or as co-chairman with a faculty member. I point this out as one of the new population groups which have come into the graduate education process. This is what one might call a new aspect of the problem of eligibility of members of the University community for graduate instruction and supervision of graduate student research.

Many of us are not personally familiar with the concept of a "graduate faculty" since, in my institution, any member who is appointed to the University faculty is, ipso facto, eligible for work at the graduate level provided this has the recommendation of his department. In view of this lack of familiarity with the appointment and promotion aspect of the faculty a graduate dean is in a very difficult position to evaluate a particular person when it comes time to approve him to teach a course. Approval of the course itself is possibly a more traditional role for a Graduate Dean and his council. It is difficult to ask for the dossier on a faculty member for this purpose when he is already considered to have satisfied the necessary criteria for appointment. This is an area "between the chairs" where we are expected at times to appraise ability to offer courses at the graduate level with no prior knowledge concerning the man's credentials. This is a counter-productive situation to say the least! I am more confident about our appraisal of non-faculty research people since their credentials are presented to the Graduate Dean for initial appointment. In many cases they are greatly superior to what is available at the regular faculty level. Similar problems arise when we are asked to make greater use of the post-doctoral fellows who frequent our campuses and who themselves would also like to participate even on a volunteer basis in an educational program in addition to carrying on their fellowship activities.

It is here, in the formulation and review of new programs, that the words (quoted above) of Chancellor Heyns bear some special meaning. While it is always comfortable to follow an aggressive and exciting department and help it move its own proposals along, it is equally or more satisfying to the Deans to be able to see certain areas presently not covered and to meet with acceptance of the idea and to discover interest in such areas by a more or less inter-disciplinary modus operandi.

The Dean's entrée into long established graduate programs comes most naturally at those moments when he is asked to give resources to them, or when for a number of reasons he must review the success and the current status of that program. But a long established program is usually a difficult one in which to expect to effect improvements, or what a Dean thinks would be improvements. Mainly this is simply a matter of attrition of the inborn conservatism--respect for the status quo, that may exist. It is in the interdisciplinary areas that the Dean may have more effect, especially in seeing graduate programs which are not presently offered under such rubric. An example might be the combination of Ancient History and Mediterranean Archaeology, a program which could involve the department of Classics, the department involving archaeological work which may not only include Classics but also History of Art, Anthropology, and so forth, and also might include faculty members in the hard sciences where carbon dating and other kinds of physical means for assisting the archaeologists are available.

Indeed it is probable that today and for the next few years the greatest advances and greatest innovations in graduate programs will be in the interdisciplinary or interdepartmental offerings rather than within the existing departmental degrees. In encouraging a proposal the Dean has a very definite responsibility not only to try to assure adequate financial support from the top administration but also to aid in the assignment of additional faculty positions to the program by the prestige of his own support.

A most painful and difficult situation may well lie on the other side of the coin, the review and evaluation of existing programs. The criteria which are brought into play here are based upon reliable statistics such as the productivity of the program in terms of higher degrees earned, the length of time normally taken to obtain the degrees, the number of students who have withdrawn without achieving the degree, the length of time it takes students usually to go through each stage of the formal requirements, and of course the nature and quality of the theses which have been produced. When it comes to discontinuing programs a full review by the graduate body is needed. The procedures require the most careful presentation of the facts and allowance for "due process" to the members of the responsible department or group. A preliminary hearing of all the data, followed by the appointment of a special committee of the graduate division or council to review the whole matter and prepare a working position paper brings matters to a decision time.

A word of warning is in order: reasons for evaluation and reconsideration of a program are numerous. When this occurs as a normal process and is expected, it's one thing. But occasionally faculty members, singly or in groups or, more frequently now, segments of the graduate student population in the program, request such reviews. It's very easy to forget the need for recalling that this may not be an objective presentation. Full review of the situation is one of the prerequisites of any such action--on which the views of all participants are of extreme value. Much wasted effort can be avoided once the magnitude of the discontent is revealed by adequate and timely consultation with all interested parties.

I have already commented on the group or interdepartmental programs. There is additionally in the University of California system what is known as the Joint Doctoral Program with the California State Colleges. This was a product of the Master Plan for Higher Education in the state. In a sense it reflected a compromise in the aspirations of both segments of higher education in the state in an effort to conserve the available resources and concentrate them in those institutions where it was felt they could do the most good. It was also an effort to prevent duplication and waste of faculty resources, money, and building programs, etc. Despite some of its good points on paper it has not been too widely attractive. There are a number of reasons for this, but mainly it is cumbersome for all parties. It definitely should be encouraged and given every opportunity to succeed because it provides a way for students who find themselves in institutions not ready for the highest level of graduate work. Through a period of supplementation and complementation of their resources these institutions can become productive for students at the highest levels. I append at the end of this article a small document which gives the procedures for a joint doctoral degree illustrating the somewhat greater degree of complexity which a student in such a program has to face (Appendix A).

In general, the program does not have the same kind of "push" to it that the interinstitutional programs adopted by the C.I.C. institutions have. This is entirely due to the fact that their aims are different. In the West the state has attempted to bring the California state colleges slowly into a doctoral program effort. In the Middle West institutions which have already been involved in doctoral-level work are simply pooling their resources, and thus there is a vast difference between the two operations.

The joint doctoral program presupposes the availability of faculty with unique competences at one institution collaborating with faculties of an institution which lack that particular competence but present others of their own. There is a principle of complementarity which runs throughout the philosophy of our own joint doctoral degrees, complementarity of faculty, the physical resources, etc., and finally an interest on the part of participating units to enter into this kind of an arrangement.

The general features of such a program include a year of residence on both of the participating units' campuses. These cannot be simultaneous. Secondly, in most cases the research phase of the degree will probably be carried on at the university component although this is by no means an exclusive feature of this program. We have some cases where the facilities on the California state college campus are very much superior to those of the University, which strongly supports the development of a joint program. Joint committees, jointly administered admissions procedures, jointly administered examinations, all form part of the program. Adjustment of fees is also part of the arrangement.

The matter of the duration of the master's and doctoral studies is so much in transition at the moment and so much effort is being expended to shorten it in those areas where it has been so lengthy that I will simply refer to this activity, not knowing where the next five years will take us. We are in general pointing toward a five year or less "norm," with exceptions depending upon the complexity of the subject matter. On the other hand there is evidence that we may have been rushing students, although this at the moment is not clear. The last five years of graduate student activity is probably not typical of what will take place later because of the transitional nature of these five years in graduate education. It is not so much the actual duration which is so crucial. The important matter is whether a student feels he is moving along at a reasonable rate to each successive stage of the degree program. This, in turn, seems to be not only a function of the financial assistance available but also of the degree of personal concern evinced by the faculty in each student's case for his progress.

A subject of increasing sensitivity at the present time is the matter of an "outside" participant on the committees for the examination and the thesis. As departments grow in their internal complexity, one increasingly receives petitions to waive the appointment of a member from outside that department which is administering the degree because the department feels it is large enough, complex enough, and broadly enough representative to provide what might be considered outside members. I think this is a very poor policy if it is overly encouraged. Departments being collections of people and people being human, it seems more important than ever that an "outside" member of the faculty be present provided he is properly charged by the Dean as to his role. I think we all know and can sense intuitively the pressures on an outsider. But he is, in effect, the Dean's representative, and in effect, he saves the Dean from having to sit in on all the examinations. If it is done properly it has an exceedingly salutary effect and if it is done poorly the whole concept fails. Just how far "outside" one has to go is a matter that depends upon the structure of the institution and the subject. Going to the same department but on another campus of the institution may have some advantages, although here while one goes "outside" the immediate confines of the precise faculty, one is not getting outside the discipline. At times we have had to go outside the institution to get a proper examiner and here it costs a bit for an honorarium and for travel; therefore we try to seek from institutions not too distant in order to maintain the integrity of the policy.

I do not really see much to comment upon in the matter of appointment of such committees. This seems in a sense a democratically conceived procedure in which the proper functionary in the department would nominate those who in his view are most qualified to examine the candidate. The student himself should have a voice in this matter and be asked to suggest persons whom he would like to have examine him. This information is submitted to the Dean of the Graduate School for his final review and appointment. I never hesitate especially in those programs which need some artificial resuscitation to insert a highly qualified and very rigorous examiner irrespective of whether he has been recommended. This usually creates a terrible situation for a moment, but it does lead to acceptable adjustments and accommodations and the point is well made for the future. It usually takes one such action to clear the air.

The nature of the qualifying examination is the one thing which has undergone the most far reaching changes from the old encyclopedic questioning almost to the opposite extreme of exclusive focus upon the research which is to be done for the thesis. In between are all kinds of variations known as the proposition-type examination, or the combined proposition-encyclopedic test, etc. These vary with the departments and with the people, but it is quite clear from the range that the faculties today are clearly experimenting with different ways to appraise a student and include written or oral appraisal situations.* From the enormous growth of knowledge it is clear that in all fairness to the student it is absolutely essential that delimitation of the area of the examination must be carried out in advance. But within this boundary a wide variety of types of examination is quite possible and quite valid. After all, the main thing to find out is the student's creativity which will be necessary in developing the thesis topic and the capacity for sustained effort that will be needed in the research phase.

In the matter of advancement to candidacy there is an item which should be called to the attention of deans. It deals with the positioning of the foreign language requirement where this is still in effect for advancement to candidacy. Traditionally, of course, the language examinations were supposed to have been passed before the student came up for the qualifying oral examinations. As the language requirement became more and more a subject of dissent within the student body and faculties, it became more and more difficult in some departments to enforce this sequence. To prevent a student from moving on with his research while he struggled and struggled to meet the language examinations seemed to be merely defeating the general purpose of the whole procedure. Thus many departments failed to recommend that a student be advanced to candidacy until it became not the first but the last step, with the thesis research accomplished and written up. We found departments advancing a student to candidacy only to have him file his thesis the very next day. The whole procedure became a mockery and the reason was only that he was finally able to pass his language examinations just as he was supposed to receive his degree.

We have adjusted to this, in order to achieve the larger and more valid academic and intellectual goal, namely, to accept the examinations for the foreign languages whenever they are completed as long as they are completed. This means that advancement to candidacy can indeed take place in the absence of the language examinations and I'm willing to accept this compromise in order to make the larger case.

In certain of the social sciences and in some of the humanistic fields, the least satisfactorily resolved feature of today's doctoral programs is the problem of supervising the research of the student undertaken while he is outside of the institution. This is indeed a Pandora's box. No thought has been given to this growing problem and its extreme example astounded me one year in the form of a request of a graduate student that her qualifying examinations for candidacy be conducted at the airport in Tokyo. Thinking that this was a macabre joke, I learned to my amazement that, indeed, her committee was airborne for the next several weeks and it just so happened that they would all touch down at Tokyo and were quite amenable to giving her the examination there.

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*Another reason for the experimentation is to find how to make the examination more enjoyable for the faculty and student (!).

And how are we going to solve the problem of adequate supervision away from the campus? I know of no way budgetarily that we can solve the matter except by leaves of absence and accidents of sabbatical that would place a faculty member in that location. This perhaps ought to be planned before a department approves such an arrangement. Or an interinstitutional cooperation perhaps is part of the solution. But I raise it not with any idea of a solution, but to point out one of the growing problems and situations with our graduate student mobility which very often tends to take the form of a "wander" year rather than a period of sustained disciplined effort for which an award may have been given to make it possible.

I also think that the appraisal of this year's work needs to be drastically revised, and the appraisal itself carried out scrupulously to see if we are wasting student time, faculty effort, and university money. In theory it has merit, and perhaps now is the time to find out how close or how far apart the means and the ends have turned out to be.

In residence, the supervision of the research is also a matter of growing concern in the humanities and the social sciences where the relationship between faculty and student perhaps is not as close as it is in other areas. This is a matter that needs constant talking out, for many withdrawals from the university cite as the fundamental reason the lack of contact between faculty supervisor and student. Obviously with faults on both sides it is still a fact that the system needs some re-thinking and re-doing.

General features of graduate degree programs would be less than complete without mention of, and perhaps a contribution to, the matter of the graduate teaching fellow or assistant. I regard this as a most critical subject today not only for its own sake but for softening the potentially abrasive action of graduate assistant unionization. This new phenomenon of handling fellows' problems as "labor grievances" must be met and accommodations reached. My own reaction is that accommodation of institutions is long overdue and one solution is presented for your reflection at a calm moment in the form of an appendix to my paper (Appendix B). It originated from the Department of Political Science and was adopted by unanimous vote of the faculty, no small measure of its acceptability today in a social science area. It is raised in this paper because it is so integrated into the graduate program as to become vital to it and to student welfare.

One may conclude this essay by referring to matters that reflect the growth points of this subject. The first point was raised most clearly by Frederick Rudolph's review in the New York Times issue of June 22, 1969, where he reviewed two books recently written by Harold Taylor. In the review of these books, one called Students Without Teachers--A Crisis in the University, the other called The World As Teacher, Rudolph states that "Taylor in these two new studies clearly intends to radicalize higher education in the United States," and one of the books, namely, Students

Without Teachers, takes its title from a statement in a memorial to Ortega y Gasset as follows: "We are students without teachers . . . we study, but we are not taught . . . no one will admit that we are the real foundation of the university." This refers to "the neglect of students of the modern university. And the neglect of students and the neglect of the social order are the two fundamental failures of the modern university."

Second, Taylor states that "What needs to be done is to prepare American teachers on all levels to teach with sensitivity to the world beyond America, to cause teachers to think globally and to be alert to the ways in which their own country is deeply implicated in a world society in the needs of today and tomorrow. . . Sensitive student leaders--call them militants, radicals, etc.--have recognized that the central fact of modern American life is education. And the central institution for defining the quality of American life, for shaping American goals and priorities, and for providing an informed running critique of the American performance is the American university."

It stands, therefore, that if we accept this, and it is difficult not to today, then we must ask what are the purposes and the goals of these higher degrees that we have been characterizing by their general features and what is needed to have them serve the 21st Century or at least the last remaining decades of the present century? "It would appear that we must recognize the ways in which the students are now insinuating into academic life a new concern for individual growth, social action, experience, and the idea of community," as Rudolph puts it so clearly. This means that students must be consulted in the constructs of a new program, in the reform and liberalization if needed of ongoing programs. Their experience in Peace Corps, in Vista, in Head Start, in the National Teacher's Corps, etc , and in the movement that has taken place in the streets provides us with views on the makings of a new educational structure. If we have a new educational structure, we are bound to have "non-negotiable" demands for new structures in the graduate degree program.

The emphasis should be on how the plan and the suggestions affect the growth and lives of students. The innovations that pass this test acknowledge the essential unity of education and the world, and respond to student pressures that they be taken seriously as self-educators. We must take the initiative on behalf of reform. These initiatives must be reflected in the goals of our higher degrees. Such goals encompass global and national qualities and perspectives, a sense of international relations, and of the needs of countries other than our own in the subject matter we are teaching, where appropriate.

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Procedures for Developing and Handling Proposals for Joint Doctoral Programs

The *Master Plan for Higher Education in California, 1960–1975* and the Donahoe Higher Education Act of the 1960 State of California Legislature were designed to provide maximum opportunities for residents of California to obtain the best possible higher education in state-supported schools at the least expense to both students and taxpayers through greater utilization of educational resources available in the State. The rapidly increasing population made imperative a rationalization of the State's system of collegiate education. To that end, the Donahoe Act defines the educational missions of the University of California, the California State Colleges and the public junior colleges, and provides for cooperation among these segments.

The Donahoe Act provides that:

22552. The university has the sole authority in public higher education to award the doctoral degree in all fields of learning, except that it may agree with the state colleges to award joint doctoral degrees in selected fields.

To effectively implement this provision of the Act, The Regents of the University of California and The Trustees of the California State Colleges authorized the establishment of a Joint Graduate Board consisting of five members and one alternate appointed by the President of the University and five members and one alternate appointed by the Chancellor of the California State Colleges. Beginning in 1962 the Joint Graduate Board has held eight meetings and after soliciting the advice of the Graduate Councils and various administrative officers of the University and the State Colleges the Board presented a document providing for the "Organization and Procedures for the Joint Doctoral Program of the Joint Graduate Board." This document, together with a statement of principles, has been approved by The Regents and by the Trustees. (*See document appended.*)

The attention of members of the faculty who are interested in developing joint doctoral programs is particularly called to the sequence of steps specified in Section III A, B, and C. Before negotiations or discussions are begun between interested parties in the two systems, there must be a review of qualifications, desirability, and appropriateness. After these reviews and recommendations have been made the President of the University will, if he approves, request permission of the Chancellor of the State Colleges to negotiate an agreement for a joint doctoral degree. If this permission is granted, the procedures indicated in Section III D, E, F and G will follow. It is important that the negotiations and discussions between the two systems should not be undertaken by individual faculty members of the two systems unless authorized by the Chancellor of the University campus and the President of the State College concerned, in accordance with Section III D.

The preliminary proposal developed in III A and the evaluations provided for in III B should pass in sequence from the originator to the Chairman of the Department, the Dean of the School or College, the Dean of the Graduate Division, the Chancellor and finally to the Presiden Each administrative officer will brief evaluate the qualifications of the interest unit and comment on the desirability ar appropriateness of the proposal. These r views and comments are directed towa the desirability of undertaking negotiation Approvals of proposed programs will not be sought until the Graduate Council has considered the proposal, as provided for in III E and their report has been reviewed by the Coordinating Committee on Graduate Affairs in the same manner as now required for all new Ph.D. programs on any University campus.

Acting in accordance with the procedures that have now been adopted by The Regents and the Trustees, faculty members interested in making proposals under the joint doctoral program should seek the informal advice of the Deans of the Graduate Divisions, since they have been most helpful in developing this document on procedures.

Appendix

Joint Doctoral Program

(The following statement of principles and the document "Organization and Procedures for the Joint Doctoral Program of the Joint Graduate Board" were approved by The Regents of the University of California on Sept. 20, 1963, and by The Trustees of the California State Colleges on Sept. 6 and Oct. 11, 1963.)

Statement of Principles

This cooperative program is undertaken within the terms of the Donahoe Higher Education Act and in accord with the spirit of the Master Plan for Higher Education in California. It is intended to be responsive to unmet needs in keeping with the principle of differentiation of functions. The policies recommended by the Joint Graduate Board assure the full maintenance of quality. The Board of Regents of the University of California and the Trustees of the State Colleges hereby approve the "Organization and Procedures for the Joint Doctoral Program" as set forth in the attached document, and subject to the four following understandings:

1. Proposals for joint doctoral programs in any field will be open for consideration (with the exception of instruction in the Profession of Law and Graduate Instruction in the Professions of Medicine, Dentistry, Veterinary Medicine, and Architecture, as provided in the Donahoe Act), but selection and approval will be subject to the criteria of readiness to engage in a doctoral program, as outlined in the "Organization and Procedures for the Joint Doctoral Program of the Joint Graduate Board," and also to other appropriate criteria such as: suitability of the field for the degree proposed, willingness of faculty members to participate in the program and adequacy of existing staff and facilities.

2. The State Colleges will, as provided for in the Donahoe Higher Education Act, seek budgetary support for such staffing, research facilities, library resources, etc., as are required to meet the needs of their master's degree programs. The joint doctoral degree program for that portion of the doctoral degree study undertaken in the State Colleges will use facilities that are also necessary for the master's degree programs of the State Colleges. The Donahoe Higher Education Act assigns to the University the primary responsibility for doctoral degree education, except as it may agree with the State Colleges to award joint doctoral degrees, and does not contemplate the duplication of specialized facilities in the State Colleges solely for the sake of the joint doctoral program.

3. The University will continue to seek budgetary support to meet the growing needs of the state for doctoral-trained manpower.

4. Joint doctoral programs will be planned, developed, and offered with full participation and sharing of responsibility at all stages between faculties and administrations of both the University and the State Colleges, as provided in the

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"Organization and Procedures for the Joint Doctoral Program of the Joint Graduate Board."

Organization and Procedures for the Joint Doctoral Program of the Joint Graduate Board

I. There shall be a Joint Graduate Board, the organization of which shall be as follows:

A. Membership

1. Five members and one alternate shall be appointed by the President of the University of California, and five members and one alternate shall be appointed by the Chancellor of the California State Colleges.

2. The alternate members will receive the agenda and attend all meetings but will have voting privileges only as they may be substituting for one of the regular members. The alternates will serve as recording secretary as the meetings are held on their respective campuses.

B. Chairman

1. The President of the University and the Chancellor of the State Colleges will each appoint a co-chairman from the membership of the Board.

2. The Chairmanship will alternate between the University and the State Colleges, a University member serving as chairman when a meeting is arranged by the University, a State College member as chairman when a meeting is arranged by the State Colleges.

C. Meetings

1. Meetings will normally alternate between a campus of the University and a State College.

2. Time and date for scheduled meetings will be established at each meeting. Special meetings may be called as necessary by joint action of the co-chairmen.

D. Agenda and Minutes

1. The agenda for each meeting will be developed by the co-chairmen and will be distributed at least a week in advance of the meeting.

2. The minutes will be a record of motions, proposals, basic issues, problems and pertinent discussion, not a verbatim report. Actions and agreements shall be clearly identified.

E. Voting

1. At least eight affirmative votes will be necessary to carry a motion for action.

II. Duties and Responsibilities of Joint Graduate Board shall be:

A. To recommend policies, agreements and procedures to the President of the University and the Chancellor of the State Colleges.

B. To review and evaluate policies, agreements and procedures of the Joint Graduate Board, and programs in operation.

C. To review, aid in the development of, and approve arrangements and agreement on programs referred to it for study.

D. To recommend to appropriate authorities those programs which should be approved, established, or discontinued.

E. To request such information from the University and the State Colleges as the Joint Graduate Board considers necessary to the performance of its functions.

III. Procedure for Developing and Handling Proposals for Joint Doctoral Programs. The sequence of steps shall be as follows:

A. Expression of interest in and rationale for a joint doctoral program by a given unit (department, division, interdisciplinary group) to the appropriate local authorities.

B. Evaluation of qualifications of the interested unit, as well as the desirability and appropriateness of the proposal, by authorities within the system of which it is a part.

C. Request to the President of the University and to the Chancellor of the State Colleges, through appropriate channels, for permission to negotiate an agreement for a joint doctoral program.

D. If permission is granted, background information shall be prepared under the direction of the Chancellor of the University campus and the President of the State College concerned, and shall include for each cooperating unit statements regarding:

1. Academic staff: Degrees, honors, professional and other relevant experience, publications, and other matters pertinent to judging their qualifications to guide advanced graduate work.

2. Academic unit: Experience with graduate study, degrees offered, number of degrees awarded, years in which each graduate degree program was authorized.

3. Instructional and research facilities: Description of facilities available to accommodate joint doctoral candidates.

E. Cooperating units will exchange background information, which will also be reviewed by graduate authorities. Each cooperating unit will be called upon to certify as to:

1. The adequacy of the two units together to establish and participate in the joint doctoral program, taking into account the degree of complementarity in staffs and other resources.

2. The availability of time, on the part of their own staff, to participate in a joint doctoral program.

F. A formal proposal, including all materials under D and E above, and including a statement of the requirements for the joint degree, shall be prepared by an ad hoc joint committee of the cooperating unit and shall be forwarded, through channels, to the President of the University and to the Chancellor of the State Colleges, who, if they deem it worthy of further consideration, shall refer it to the Joint Graduate Board for action.

G. After review by the Joint Graduate Board, the proposal shall be returned with its recommendation to the President of the University and the Chancellor of the State Colleges for appropriate action.

IV. Admission and Guidance of Students under the Joint Doctoral Program.

A. The qualifications of applicants for admission will be reviewed and approved by appropriate graduate authorities from the cooperating institutions. Admission and guidance of students under the joint doctoral program shall be consonant with procedures already practiced by University units administering a doctoral degree in the field concerned. Specific entrance regulations may be established for each separate joint doctoral program.

1. In order to be considered for the joint doctoral program, a student must have been admitted to graduate status in both the University campus and the State College concerned.

2. A student who declares his intention to enter the joint doctoral program shall be reviewed by the faculty advisers especially appointed for the joint doctoral program of the units concerned. These advisers shall make recommendations to the appropriate graduate authorities concerning the acceptability of the applicant.

3. Upon declaration of his intention, an applicant for the joint doctoral program shall be placed under the guidance of the faculty advisers of the University and the State College units concerned, who will guide him cooperatively in his course of study.

B. Entry into the joint doctoral program occurs when the student is accepted by the appropriate graduate authorities of each cooperating unit as qualified to pursue a program of study for the doctorate.

C. After entering the joint doctoral program each student shall complete the equivalent of one year of residence at each of the cooperating institutions. These two years of residence cannot be acquired simultaneously within one academic year. In fulfilling this residence requirement the student shall complete the equivalent of a one-year full-time resident program in each institution. The definition of residence shall be in accord with the rules and regulations governing the University campus and the State College campus, respectively.

D. An advisory committee shall be appointed for each student admitted to a joint doctoral program.

1. It shall be composed of an appropriate number of University and State College faculty members, chosen according to the usual internal processes.

2. The committee will develop an educational program with the student which will fulfill the requirements for the degree, subject to the approval of the graduate authorities on the cooperating campuses. The sequence of residence study at the cooperating institutions shall be determined by the student's faculty advisers with regard for the objectives of the student and the resources of the respective institutions.

3. The committee will conduct the qualifying examinations.

E. A thesis committee, which may or may not have the same membership as the advisory committee, shall be appointed to supervise the candidate's research and dissertation and to conduct the final examination, if any. It shall be under the direction of a chairman who will be appointed on the recommendation of the members of the committee.

F. Copies of the dissertation shall be deposited in accordance with the rules of the cooperating institutions.

G. If a student fails to make satisfactory progress, he may be disqualified by the joint action of the appropriate authorities of the cooperating institutions.

H. The degree shall be awarded jointly by the Regents and the Trustees, in the names of both the cooperating institutions.

V. Governing Principles of the Joint Doctoral Programs.

A. Each degree program shall be planned and developed jointly by faculty members from both cooperating institutions.

B. General administration and supervision of an established program shall be under the direction of appropriate graduate authorities in the cooperating institutions.

C. The procedures and policies of the joint doctoral programs shall be compatible with those of the cooperating institutions.

D. Nothing in any agreement shall be construed as altering the delegation of responsibilities by governing boards to faculties within either segment

APPENDIX B

May 1969

LOWER DIVISION PROGRAM IN POLITICAL SCIENCE

At the present time the Department of Political Science requires its majors to take three lower division courses: Political Science I (American Government), Political Science 2 (Comparative Government), and Political Science 3 (Political Theory). These are commonly taught as large lecture courses with teaching assistants. There are approximately 800 students a year in each of these courses, many of whom do not consider themselves potential majors.

This proposal would abolish both the large lecture sections and the present composition of Political Science 1, 2 and 3. Instead of the large lecture there would be 40 sections of 40 students each in reconstituted introductory courses. Each faculty member teaching these courses would be asked to give an introduction to Political Science.

In addition to two quarters of this introductory work there would be a one-quarter lower division tutorial program for all political science majors who have completed the other two courses. These tutorials would involve approximately 15 undergraduate students working with a teaching assistant. The teaching assistants would meet these students in three groups of five students each at least once a week. They would also help direct the students' individual work. A faculty committee will be appointed to work out a format for these tutorials.

INTRODUCTORY COURSE STAFFING

The introductory courses would be staffed by regular faculty and acting instructors. The department now has five acting instructors who teach a total of ten introductory courses. The only additional input of resources required for the new program would be an expansion in the number of acting instructors from five to eight. These eight people, who will be writing their dissertations, would teach 16 of the new courses. The Department now has nine faculty members teaching the large lecture courses each year, who receive two-course teaching credit because of the difficulty of the task and the supervision of teaching assistants that is required. These 18 course units would be added to the 16 taught by acting instructors, thereby providing staff for 34 sections. Only six additional quarters of teaching need be found to offer 40 sections. In order to staff this program, each faculty member of the Department would need to teach at least one introductory course every two years.

TEACHING ASSISTANTS

In the past the Political Science Department has not paid sufficient attention to the preparation of its graduate students for future teaching responsibilities. The new Graduate Program will be revised to include a provision that all Ph.D. students in Political Science will be required to teach for one year during their graduate program. This will assure that almost all our graduate students have an opportunity for some teaching experience. As in the past the teaching assistants will be selected by the Graduate Studies Committee. Students may have this teaching requirement waived by petitioning the Graduate Committee, explaining the circumstances.

During the quarter that a faculty member teaches an introductory course of 40 students he will have a teaching assistant available to work with him. The duties of this teaching assistant shall be to help the faculty member do all the normal things that teachers do. Teaching assistants would be expected to give approximately five lectures during the quarter. They would grade approximately 15 papers. They would hold office hours to consult with students. (These office hours will be in addition to those which must be maintained by the faculty member. The teaching assistant should not serve instead of but in addition to the services normally performed by the faculty member.) The class should be broken down periodically into discussion sections led by the faculty member and teaching assistant. In addition, the faculty member and teaching assistant should agree on other ways in which they can engage in effective teaching.

The procedure to be used for matching teaching assistants to faculty will be a preferential list prepared by both the faculty member and the student. Each will list their preference one through five. These lists will be reviewed and assignments made according to the highest preferences possible.

During one of the three quarters the teaching assistant would be assigned to a large upper division course to take responsibilities for discussion sections somewhat along the lines of our present teaching assistantship.

A third quarter of a teaching assistant's experience would be to take responsibility for the tutorials.

The faculty member with whom the teaching assistants have been working in the teaching seminars will be formally responsible for grades in their tutorial sections.

TEACHING SEMINARS

Two faculty members will be selected each year to conduct a seminar for all tutors that will provide broader perspectives on the substantive material to be covered in the tutorials. The second function of the seminar will be to discuss more effective approaches to teaching. These faculty members will also consult with the tutors on matters of evaluation, assignments and student workloads.

GENERAL FEATURES OF GRADUATE DEGREE PROGRAMS

Milton E. Muelder
Vice President and Dean
Michigan State University

The American system of higher education, without equal in the world, may be characterized as one possessing high diversity, appreciable individuality and an enormous drive and competition among universities toward further development of their own personalities and excellence. But the system is also characterized by strong commonalities and a considerable amount of interaction--as witness this workshop conference. Much mutual assistance and counsel are given. This takes place in frequent correspondence, often involving just one more questionnaire, as well as in professional conferences and publications; newer institutions make inquiries of older ones, older ones make new studies, and professors inquire from professors and even from deans under the protection of a committee.

From one perspective "General Features of Graduate Degree Programs" takes on a special meaning when one notes how keenly the graduate education experience is etched on the student who in later years frequently recalls as almost traumatic experiences his comprehensive exams, drudgery courses, pitfalls in completing his dissertation, etc., etc. For too many the graduate school experience represents the acme rather than the commencement of a large research/education undertaking.

An attempt will be made first to sketch a format of the general technical features of the graduate degree programs--emphasizing both commonality and diversity--and then to underscore intellectual characteristics and intangibles which distinguish the thrust and the mood of graduate programs from undergraduate.

Mr. Norman Smith, a doctoral candidate in our office, has been busy trying to interpret the graduate catalogs of some of the Big Ten universities along with others on the East, Gulf, and West coasts, with reference to general regulations for the handling of academic programs. Finding simple and clear answers to direct questions has been for him a frustrating experience--a commentary on the state of some of our affairs in graduate school administration. Diversity exists on individual items but in general universities take care that some statement, some rule, or some regulation exists to express the requirement of the respective school concerning each of the following items: 1) General registration regulations, 2) Degree credits, including composition of credits, 3) Language skills, 4) Continuous registration, 5) Time limits for completion of degree, and 6) Examinations. (See Tables 1-3.)

Thus under general registration regulations each institution indicates: What GPA is required for admission; what minimal credits are required for the master's degree and what for the doctorate; what minimal and maximal credits for these respective degrees are required for a graduate assistant or graduate fellow on a quarter-time, half-time, three quarter-time, or full-time basis; what are the tuition and fees--in-state and out-state (Table 1).

Under degree credit requirements fall the specifications on how much course credit and how much thesis credit to require or allow for master's and for the doctoral degrees; what residence requirements exist for the master's and doctorate. How are major and minors defined for the master's and the doctorate and how many undergraduate course credits are allowed--if any? What requirements exist re foreign language skills--or even other specialized skills such as mathematics, statistics and computer science. Is there a continuous registration requirement. What time limits have been established for completion of the master's and doctorate. What are the specific examinations for each advanced degree, such as preliminary, qualifying, comprehensive, or final oral (Tables 2, 3).

Although a degree of agreement exists on a number of these items, there is a wide variation among institutions and sometimes silence. Thus, total credits for the master's degree (reckoned on a quarter basis) can vary from 27 for the U. of Wisconsin to 48 for Harvard and the U. of Illinois. Most fall in the range from 36 to 45 credits. Total credits for the Ph.D. can vary from 81 for the U. of Wisconsin and Michigan State to 135 for the U. of Indiana and Ohio State University and 144 for the U. of Illinois.

To be sure, some of these regulations are hard to interpret and generalizations often can only be treated as approximations. Thus, for Michigan State, with which I am reasonably familiar, 81 credits are cited as required for the Ph.D. but, strictly speaking, no course credits are required. If, in the view of the major professor and his committee, the candidate is ready for his prelims, only dissertation research (namely 36 credits) is needed. De facto, the equivalent of a master's degree or 45 credits, plus 36 dissertation credits represent the minimum. We know of some perennial scholars--active in school politics--who have over 100 course credits, to which the dissertation credits will have to be added.

Of the degree requirements, the one undergoing the most rapid change is that of foreign language. The new graduate dean would be advised to check not only the very latest catalog but additionally to touch base with the respective graduate office for the latest decision of the Graduate Council.

As a complement to these technical requirements, that mark stages in the process of graduate education, there are several more general features that merit consideration:

1) Continuing review and assessment

Review and assessment of academic programs and the effectiveness of their administration may take place both within and from without the institution. Some universities or departments within universities in fact employ outside reviewers to study and make recommendations concerning aspects of graduate work. Thus some departments may engage outside reviewers to advise on such matters as recruitment of faculty and faculty tenure decisions. Or the Provost, the Graduate Dean, the Dean of the College or the department chairman--working together--may ask for an intensive self study of the respective department--again engaging outstanding reviewers to assist. Each region of the country has accrediting agencies which make periodic reviews. Critical reviews are also made at times by professional societies, or by panels of experts who are engaged by one of the federal agencies to recommend the approval or disapproval of a major grant to a university. In their assessment of the quality of a proposal, such panels explore the presence of competent and interested faculty, the adequacy of faculties, the congruence of the proposal with the long-range educational goals and mission of the institution, and its undergirding by strong undergraduate programs and by the central administration.

2) Emphasis on research training

Research training, the sound grounding in that research methodology appropriate to the area to equip one to pursue the cutting edge of new knowledge, represents one of the most important responsibilities of the Graduate School. The university distinguishes itself above all from the highly competent, useful and productive research carried out directly by industry and the government by its obligation to reproduce its own, i.e., to train others to carry on the torch of learning and research. Because of this important distinction some have referred to the non-university research institutes or labs as sterile--in the sense that training in basic requirements for fundamental research is missing.

The German university influence with its emphasis on basic research pervades the American universities. The latter half of the nineteenth century saw some 10,000 American scholars go to Europe, especially Germany, where they became exposed to the seminar-research approach. Here the major professor met with relatively small numbers of advanced students interacting in intensive discussion on the most correct and thorough manner to pursue some basic problem. The scholarly approach of the Gruendlichkeit variety became a by-word. But the German seminar system was appropriated as an instrument of learning and training by the department of the American university rather than remaining the prerogative of merely one person (the Herr Professor), giving it a broader base of participation and responsibility.

The American scene, especially in science departments for which off-campus funds are available, reveals a universal drive of faculty drafting proposals not only to support their own research but additionally to develop funds to support graduate students with whom a research partnership can be developed. The Mark Hopkins one-to-one relationship exists in many labs over and beyond the formal classes and the seminars.

3) Decentralization

The degree of decentralization in administration on some systematic and orderly basis or, stated another way, the use of indirect administration as opposed to direct administration should respond to the conditions obtaining in the respective university. Centralized or direct administration may be employed to good advantage in a situation involving a small number of students, limited areas of academic concentration, and a small faculty, especially if the faculty is inexperienced and in need of considerable guidance and advice on academic curricula and standards. The situation is quite different in a large university having thousands of graduate students, several hundred fields of concentration, and a faculty of over 1,000 who bring to their assignments a high degree of competence and expertise, and who have distinguished research programs and impressive publication records. Here a broader base of administrative support and competence on a decentralized basis is in order.

4) Greater mobility of students

Contrasted with the undergraduate college the student body of the graduate school will draw in much higher degree from a larger geographic area. The percentage of students from out-of-state and from out-of-country will be greater. In this respect the graduate school will be more national 1) in population, 2) in the origin of funds for support of advanced teaching and research programs, and 3) in the services and contributions which it renders.

5) Participation in professional organizations

Professional graduate organizations exist to promote and help develop graduate education. Some of these are regional, some national. It is assumed that graduate deans will take on responsibilities not only to attend meetings of such organizations but also to participate actively. Matters of major national policy and concern touching the future welfare of graduate education are frequently considered.

6) Importance of library and scientific equipment, including computer capabilities

Because of the central importance of the library to all graduate programs, the librarian of the university is sometimes a member ex-officio of the Graduate Council or that body created to review proposals for new graduate degree programs or the major expansion of existing ones. His independent assessment of the library resources along with other assessments by interested faculty is often sought.

In recent years the computer has become a facility of central importance to the entire educational/research enterprise. Its significance in the future will be greater, not less; it deserves and is gaining attention for support almost equal to that of the library; annual costs may in fact become comparable.

Scientific equipment is becoming more and more sophisticated; hence more and more expensive. A study of equipment as needed by new and even older programs requires continuing evaluation and study.

7) Common problems

The commendable urge to have graduate students possess the best possible preparation often leads to the less commendable and impossible task of attempting to provide them with a complete education. An inordinate emphasis on the acquisition of detailed subject matter, rather than refinement of methodology and the way to discover new knowledge, may ensue. When abetted by the current formidable explosion of knowledge, the length of time to complete the doctorate may become unduly extended; much of the excitement of intellectual pursuit and inquiry may become bogged down in unrealistic assignments of sheer drudgery, and the dissertation can be another exploration of trivia. Simple rules and guidelines are difficult to render; the integrity of the major professor needs to be sustained and supported. But frank discussion of this entire situation can be encouraged at every level of the graduate administration hierarchy.

A perennial problem is to develop understanding of the importance and uniqueness of graduate education on the part of state legislators. Arguments that this education is more expensive and that it is vital to the university often fail to impress the legislator who is "vote" conscious, by political necessity; he may be more responsive to greater accommodations of student numbers at the undergraduate level. And even after dollars are received from state appropriations--which are never enough--hard value judgments ensue as to desirable and equitable distributions within the institution. The difficulty always is obtaining free money for fellowships and scholarships, as well as free money for research, especially for the young scholar who is seeking to get his graduate research program underway. And as yet predictable annual funds from federal resources do not exist.

There is another side to the graduate educational enterprise--the spiritual and intellectual ambient--about which I would like to share some reactions and thoughts. There may be a gap between intellectual and educational aspirations and performance but, without exciting goals and high purposes, the elan to help achieve more interesting and more stimulating graduate schools will not be present.

The wonderful but awesome diversity of subject matter, expressed organizationally in a variety of departments and colleges and subdivided further into many specialities within these units, calls indeed for the identification and organization of resources of many specialized talents. Sophisticated recruiting of faculty and students and sophisticated assessments of performance also are among the most important responsibilities of the graduate school. But with all the diversity and specialization there abides a commonality of purpose and spirit which should be recognized and which can pervade the entire institution and help give it a distinct personality. To help create a sense of unity concerning goals and purposes each institution will have to undertake those things consonant with its stage of development and commitments. Some universities express this through the sponsorship by the Graduate Office of major lecturers, conferences, and seminars; of fellowships and scholarships identified directly with the Graduate Office. Some universities express this further by the involvement of the Graduate Office in the support of major research programs and/or the administration of "seed money" for smaller projects, especially those of younger faculty. The Dean himself as a leader in the academic community can also give effective symbolism to the central role of the graduate office.

I never fail to be impressed by the expression of the unity of educational purpose and function of the Graduate School at our annual graduate convocation held for new students. Brief presentations--inspirational in character--on the nature of graduate education--are made by a faculty representative of the Graduate Council and by one of the Deans. There is a rotation each year so that over a period all major academic units of the University are represented.

Cryptic statements and views from a variety of academic representatives illustrate how, among qualities of diversity and individuality, there abides enduring common values of the intellectual spirit.

The Director of Communication Research expressed himself thusly to incoming graduate students. Some of his comments will be given more fully as the first in this series. Comments of others **will supplement** or reinforce the items selected.

> It is appropriate, I believe, that I talk to you as an individual faculty member, since the essence of graduate work is the relationship between individual faculty member and individual graduate student. The university is a wonderfully complex social organization which performs many functions; certainly one of the most important of these is that it provides the framework which makes possible the intimate yet impersonal relationship between teacher and graduate student.
>
> We can summarize some aspects of faculty requests by saying that the faculty will ask you to become SOPHISTICATED. They will want you to know your subject matter; to know the important men in your field and their works; to know the problems that have been investigated; to know the frontier areas where new, important work is to be done.
>
> They hope you will soon stop asking simple-minded questions; they hope you will accumulate and integrate large bodies of knowledge so that you can give your attention to complex, current questions of theoretical significance. . . .
>
> We have only covered part of what the faculty will ask of you; it also asks you: 1) to synthesize your knowledge into new forms--new categories--new theories; 2) to create new knowledge.

Three dilemmas, he emphasized, exist for the graduate student:

> 1) How to become sophisticated, but how to remain at least a little naive; 2) How to become rigorous, but how to preserve some recklessness; and 3) How to be individualistic and private, and yet be a contributor to society at large.

He admonished as follows:

> Much of what happens to you in the course of graduate work will be essentially private. And many of the rewards that will come to you are as private as the endeavors which produce them; the personal satisfaction of knowing, the glow of individual discovery; the pride of competence. But here again, we face a dilemma. For your work is not complete, your efforts and those of faculty not successful, until your efforts have in some measure become public. You must give back to the world a measure of your private knowledge and discovery; you must respond to some of the pressures and demands of society. For your knowledge, your discoveries--as private as they may be--belong to society. The isolation, the loneliness which quite possibly you will enjoy, is provided by society.

The Dean of the College of Natural Science, a biochemist by training, gave the following advice:

> It is obvious therefore that students of the humanities and the social sciences must be aware of the advances in the physical and biological sciences and must consider how these advances may affect society both culturally and morally. Physical and biological scientists, on the other hand, cannot work in an ivory tower but must also be aware of the social and moral implications of their discoveries. You therefore have the challenge before you to develop your knowledge in a given field to a point where you can contribute new knowledge to that field, but at the same time you have the additional and equally important challenge to develop enough breadth of knowledge to understand the implications of your discoveries or the discoveries of others.

The Chairman of the Department of Psychology underscored problems and values of general concern. He observed as follows:

> The last forty years have brought radical changes in the life of a scholar. The atomic bomb challenged the physicist with an ethical responsibility, vis.: the scientist is morally responsible for the proper direction of power which he makes generally available. Many physicists have accepted this challenge. They have become moral philosophers as well as hard-core scientists. They must struggle with a basic ethical problem of life: What is the good, and how does one develop toward the good?
>
> This challenge of moral responsibility is not restricted to the physicist alone. The biologist, for example, can influence the direction of inheritance, and the social scientist can influence the direction of the development of societies. All scholars, whether they be humanists, social scientists, or natural scientists are pressured to accept a moral and ethical responsibility; they need to be ethical philosophers as well as specialists in other fields. The seclusion of the ivory tower is farther away than ever before.
>
> The life of intellectual creativity has never been an easy career. It is instead an all-consuming life of intellectual dedication and concentration. Problems will enter your mind and demand attention over weeks, months and years. The problems will create intellectual tensions, tensions that will cause sleepless nights and lonely days. Many of the problems will be highly specialized; you will have penetrated so deeply that talk with others about your problems will seem superficial; you will commune with yourself and yourself alone until you discover solutions, and the very solutions will create new problems as a base for further development. You will never be free of intellectual tensions.
>
> There are a number of sound reasons for [the] choice [of an intellectual life]. Fundamental among them is the essential nature of man himself; man has a need to think, to discover

> interrelationships, to find meaning in life. Few, if any, professions satisfy this need as adequately as does the life of a scholar. There is perhaps no greater thrill than that of new insights, new ideas, new theories, after having struggled intellectually for years with what seemed to be almost insoluble problems.
>
> Not all scholars will be intellectual giants. We fail more perhaps in our efforts to develop productive scholars than in any other educational endeavor; in most disciplines, more than 90 per cent of the published studies are produced by less than 10 per cent of the doctoral graduates.
>
> Another great value of being a scholar is the conviction that knowledge can make men free. Here it is well to recognize that there are at least two categories of knowledge. We in America in particular feed too exclusively at the technological table, neglecting philosophical implications and understanding of the technology we create. Technological knowledge can not only free the body, it can capture the soul and mind of man and enslave him in a technological world. Only philosophical knowledge can free the mind and soul of man. For the greatest possible good, both technological and philosophical knowledge must be developed in proper coordination.

The Chairman of the Department of Chemical Engineering similarly took a broad view:

> Promise yourself to broaden your interest during your stay with us. This takes some careful observation, but you'd be surprised at the number of new things you can enjoy in addition to your own major field of interest. A breadth of knowledge will lead to a balanced view and help you to act intelligently and accept responsibility successfully beyond your field. For this reason, engineering and science students long have been encouraged to take courses in the humanities. It is equally important for those of you majoring in the humanities to devote part of your programs to the study of the sciences and mathematics. I am not asking that you be scientists and engineers, but I am suggesting that you should have some basic understanding of what this is all about in view of the highly scientific age in which we are living.

And the Dean of the College of Veterinary Medicine gave eight articles of advice, namely:

1) Be a man of all ages.
2) Be a grateful recipient of criticism.
3) Be flexible.
4) Retain perspective and relevance.
5) Learn to produce, not just to collect.
6) Accept your obligation to disseminate, as well as to acquire knowledge.
7) Recognize that apprehension and dissatisfaction are the natural environment of the world of graduate study.
8) Cultivate your intellectual curiosity.

Perhaps we might conclude by supplementing the above with observations by three scholars of international repute, all from different fields, namely Ernst Cassirer--a cultural historian, Alfred North Whitehead--a philosopher and mathematician, and Sir Eric Ashby--a botanist.

Ernst Cassirer writes as follows:

> The work of all the great natural scientists, of Galileo and Newton, of Maxwell and Hemholtz, of Planck and Einstein, was not mere fact collecting. It was theoretical and that means constructive work. This spontaneity and productivity is the very center of all human activities. It is man's highest power, and it designates at the same time the natural boundary of our human world. In language, in religion, in art, in science, man can do no more than to build up his own universe, a symbolic universe that enables him to understand and to interpret, to articulate and organize, to synthesize and universalize his human experience.

Alfred North Whitehead states:

> A merely well-informed man is the most useless bore on God's earth. What we should aim at is producing men who produce both culture and expert knowledge in some special direction. Their expert knowledge will give them the ground to start from and their culture will lead them as deep as philosophy and as high as art. We have to remember that the valuable intellectual development is self-development and it mostly takes place between the ages of 16 and 30. . . Education with inert ideas is not only useless; it is above all things harmful.

Whitehead further states:

> You may not divide the seamless coat of learning. What education has to impart is an intimate sense for the power of ideas, for the beauty of ideas, and for the structure of ideas, together with a particular body of knowledge which has a peculiar reference to life of the being possessing it. . . Without contradictions the world would be simpler, perhaps duller, but I am certain that in education wherever you exclude specialism you destroy life.

Sir Eric Ashby observed:

> The sine qua non for a man who desires to be cultured is a deep and enduring enthusiasm to do one thing excellently.
>
> All but the most deeply entrenched pedants agree that education should be relevant to society. All agree that technology is diffusing into the common culture. But education has not yet accepted technology as a form of humanism. The idea that there is no point in learning history unless you are going to become an historian would be treated (and rightly so) with contempt. But the idea that there is no point in learning technology

unless you are going to become a technologist still seems perfectly natural. In fact this idea is just as deserving of contempt, for already no man can regard himself as adequately educated who does not understand something of the principles of technology; by which I mean the art and science of the application of systematic knowledge to work.

Table 1

REGISTRATION REGULATIONS
Selected Institutions
*No conversion--direct information

Institution	Minimum Credits (All Systems)*												Maximum Credits (All Systems)*												Tuition and Fees (Quarter Equivalents)									
	Master's						Ph.D.						Master's						Ph.D.						Instate					Out-of-State				
	All	Fellow	Assistant				All	Fellow	Assistant				All	Fellow	Assistant				All	Fellow	Assistant				Hours Carried					Hours Carried				
			1/4	1/2	3/4	1			1/4	1/2	3/4	1			1/4	1/2	3/4	1			1/4	1/2	3/4	1	3	6	9	12	15	3	6	9	12	15
University of California, Berkeley		8	6	6	6			8	6	6	6		12	12	9	9	9	4																
University of California, Los Angeles		8	6	6	6	6		8	6	6	6	6													78	78	78	78	78	405	405	405	405	405
Harvard University			12	8					12	8					16	12					16	12			197	353	510	510	667	197	353	510	510	667
University of Illinois		16						16					20	20	16	12	8	4	20	20	16	12	8	4	36	63	63	90	90	116	200	200	283	283
Indiana University		12	13	7				12	13	7			15	15	15	12	6	6	15	15	15	12	6	6	30	60	90	120	150	68	136	204	272	340
University of Michigan			6	6	6		6	6	6	6	6	2	12	12	10	8	6	5	12	12	10	8	6	5	63	103	127	127		146	306	366	366	
Michigan State University			6	6	3				6	6	3		16	16	16	12	8	4	16	16	16	12	8	4	68	107	146	194	194	129	215	301	430	430
University of Minnesota																									82	82	134	134	134	170	170	310	310	310
Northwestern University	2	9	9	9	9		2	9	9	9	9		13	13	13	13	13	4	13	13	13	13	13	4	150	290	420	420		150	290	420	420	
Ohio State University		12	7	7	7	7		12	7	7	7	7	18	18	15	15	15	15	18	18	15	15	15	15	75	75	150	150	150	168	168	336	336	336
Princeton University																									750	750	750	750	750	750	750	750	750	750
Purdue University													18	18	15	12		6	18	18	15	12		6	30	60	110	110	110	30	60	316	316	316
University of Southern California													16	16	16	16	16	16	16	16	16	16	16	16	120	240	360	480	600	120	240	360	480	600
Stanford University																																		
University of Texas													15	15	15	15	15	15	15	15	15	15	15	15										
University of Wisconsin	2	9	9	9	9		2	9	9	9	9		12	12	12	12	12	4	12	12	12	12	12	4	54	108	108	108		188	366	366	366	
Yale University																									200	400	716	716	716	200	400	716	716	716

Table 2

DEGREE CREDIT HOUR REQUIREMENTS

Selected Institutions

*Quarter term equivalents

Institution	Total Credits*			Thesis Credits*				Course Credits*			Transfer Credits*				Residence Requirements			
	Master's		Ph.D.	Master's		Ph.D.		Master's		Ph.D.	Master's		Ph.D.		Master's		Ph.D	
	Thesis	Without		Min.	Max.	Min.	Max.	Thesis	Without		Credits	Time	Credits	Time	Credits	Time	Credits	Time
University of California, Berkeley	30	36			6			30	36		6					One Year		Two Years
University of California, Los Angeles	36	36						36	36						18 UC 12 UCLA	3Q UC 2Q UCLA	36 UCLA	2 Years & 1 Continuous
Harvard University	48	48	96					48	48				48					One Year
University of Illinois	48	48	144		18			30	48				48	One Year	½ of Credits	Two Sem.	96	Two Years
Indiana University	45	45	135		9		36	36	45	99	12					One Sem.		2 consecutive semesters
University of Michigan	36	36							36		9					Two Trim.	24	Two Trimesters
Michigan State University	45	45	81		15	36	36	30	45	45	12				13		27	Three Quarters
University of Minnesota	27	45						27	45		12					Three Quart.		2 Years or Last Year
Northwestern University	36	36	108						36				72		36	One Year		3 Consecutive Quarters
Ohio State University	45	50	135						50	90	9		90		36	Three Quart.	45	Three Quarters
Princeton University																One Year		One Year
Purdue University																One Sem.		Two Sem.
University of Southern California	36	36	90		6			36	36		6				30	One Year	36	One Year
Stanford University	36	36							36		6				30	Three Quart.	36	Three Quarters
University of Texas	45	45		9	13½			31½	45		9					Two Sem.		Two Sem.
University of Wisconsin	27	27	81						27						13½	One Sem.	40½	Three Semesters
Yale University	42	42							42					One Year		One Year		Two Years

CODES
A = After Master's Degree
B = After Prelim B̄ = "B"
C = After Last Registration
D = After First Registration
E = After Candidacy
F = High Level Command of One Language
G = One Language and an outside field
H = Non-thesis
J = Thesis Program
K = Thesis substitutes for Language
O = Oral
W = Written

Table 3

OTHER DEGREE REQUIREMENTS
Selected Institutions

*Thesis and non-thesis programs
**1/6 of all credits for Ph.D. must be in minor field
***Converted to quarter term equivalents

Institution	GPA.		Composition of Credits***												Languages			Continuous Registration		Time Limits		Required Examinations	
			Master's				Ph.D.				Master's		Ph.D.		Number		Other						
	Master's	Ph.D.	Major	Minor	Other	Total	Major	Minor	Other	Total	Graduate Required	Undergraduate Allowed	Graduate Required	Undergraduate Allowed	Master's	Ph.D.	Ph.D.	Master's	Ph.D.	Master's	Ph.D.	Master's	Ph.D.
University of California, Berkeley	3.0	3.0	12* 18			30 36					12 18	18 18				2	F	D	D				Qualifying W & O Final Oral
University of California, Los Angeles	B̄	B̄				36					20	16						D	D			Comp if H	
Harvard University	B̄	B̄				48				96							F						Prelim W & or O Final
University of Illinois	30	30	24			48				144	18	30				2	F or G		B	5 D Years	7D 5A		Qualifying Exam Final Exam
Indiana University	30	30	30			45				135					1K	2	G		B	5 D	12 D		Final Oral
University of Michigan	B̄	B̄			6	36			6							2	F or G			6 D	7 D		Comprehensive W & or Oral Final Oral
Michigan State University	30	30				45				81	23	22				2	F or G			6 D	8 A	Oral if J	Prelim W & or O Final Oral
University of Minnesota	28	28 +	18 21	9	18	27 45		V6** Cr.								2				7 D	5 B	W & or O	Prelim W & O Final Oral
Northwestern University	B̄	B̄				36				108							F		B	5 D	8 C	W & or O	Qualifying Exam Final Oral
Ohio State University	B̄	B̄				45 50				135						2			B	6 D	7 B	W if H O if K	Comprehensive W & O Final Oral
Princeton University																							General Exam Final Oral
Purdue University																				3 D	10D		Prelim Final Oral
University of Southern California	2.75	.				36				90	24	12				1		E	E	3 D	5D		Qualifying Exam Defense
Stanford University						36										1				5D renewable	5B		University Oral
University of Texas	B̄	B̄	27	9		45					31½	13½								6 D			Final Oral
University of Wisconsin	B̄	B̄				27		15		81						1				5 C	5B	O & or W	Comprehensive Final Oral
Yale University						42					42	0		0		1					6D		Qualifying Written & or Oral

DATA PROCESSING AND ANALYTIC STUDIES IN GRADUATE ADMINISTRATION

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It seems apparent that the principal use of data processing by graduate divisions has been to meet the growing volume of time-hallowed procedures relating to admissions, registration, and generating records of housing, billing, loans, and so on. These are, of course, recurring and, to a degree, repetitive operations so that it has been most logical for graduate administration to move into increasingly sophisticated data processing.

The question is often asked, at what size of operations should one consider using computerized techniques. There is no simple answer. If computers are available on the campus or in the area, and if the workload continues to be overwhelming, despite the addition of clerical personnel, there are no alternatives. The bellwether of trouble will be admissions, assuming your operations are somewhat centralized. If offers and refusals are not clearing your admissions offices in reasonable time, your objectives are almost meaningless, the academic disciplines will be losing highly qualified candidates, and assistantships and other commitments will be up in the air.

It is quite possible that the computers have or will come to you and probably not on your terms. They will come because most of the institutions represented here have major undergraduate programs and the offices of the registrar and the bursar or controller will have been employing computer-based data processing for some time. Separately or in concert with these operations, a computer-assisted research capability will also have developed. In a common pattern of evolution of centralized data processing, graduate operations will typically be appended to these ongoing methods and procedures. Preparatory to actually engaging in computer-based data processing, a proficiency in relatively simple methods, employing punched cards or scanning devices, is very desirable so that experience in generating and interpreting student population characteristics precedes a plunge into more complicated methods.

There is an unmistakable inevitability to the use and impact of computers. The dramatic shift from 10 or 15 computers in use nationally in 1955, valued at $30 million, to 60,000 projected for 1970, valued at $18 billion, points the way. Computers are, however, new enough, crude enough, and generally misunderstood enough that continuing growing pains are still associated with their use.

Among some students and sectors of the faculty and at various administrative levels there is a deep-seated suspicion of computers as symptomatic of a bureaucratic culture devoid of ideals, in concert with which we have devised an educational system that regards the human components as consumers and statistical units. There is no denying that both in our society and in higher education we have increasingly dehumanized many aspects of accumulating and dispensing information and transacting other relationships that were formerly rather personalized. As this relates to students, part of the situation may be credited to the state of the art of data processing that is still quite new.

The selling point of automated data processing for graduate administration relates to notions of fantastically fast, simple, and accurate retrieval of widely varied information relating to student characteristics and activities. This, of course, is essentially true, but the Jonah is that to become a part of or to assist in evolving a routine is not simple. As has so often been said, the information obtained from computer-assisted data processing is only as reliable as the data that is put into the system.In addition to the factor of human ineptitude in the personnel responsible for directing and using the system, many errors and frustrations result from inadequacies of programming the sometimes not easily quantifiable records kept on students, particularly graduate students. Moreover, once a reasonably effective set of procedures has been evolved, that is somewhat compatible with stated objectives, something called "the system," with several cadres of systems people, takes over. Because graduate division objectives have often been rumped or otherwise attached to a system that was evolved for undergraduate or bookkeeping purposes, the degree of sensitivity required may be lacking and suggestions of the need for changes may be quite beyond the abilities or inclinations of the programmers and others. Thus, certain objectives and procedures that are beneficial to the graduate division are compromised. This transfer of blurred objectives is easily passed on to students who are periodically given a packet of forms to fill out to generate information for the system that allows no departures from preconceived norms and is not easily adjusted when exceptions are absolutely necessary.

As such a system evolves, one of the purported initial advantages that seems to be easily lost is that, by mechanizing procedures and reducing some of the endless paper shuffling and other aspects of remote control, professional and subprofessional staff in the graduate division will have more time to spend with students and treat them as individuals. It may be discovered, however, that one's own staff have also become enamored of the system and are actually compounding its browbeating characteristics. Periodically, therefore, deans and associate deans should ask the questions, "What are we doing?" and "What would be useful to do?" Thus, as a graduate division moves into data processing, it must assert, retain or, if not previously understood, preempt the right of experimentation; and periodically make it clear that the present system is not set in concrete and subject to change only as perceived by the systems people and their clerical allies in the graduate office. This implies then that scholarly and humane objectives must be kept in the forefront and the scholarly wing of the operations cannot allow itself the luxury of turning things over entirely to technical specialists. The administrative-scholars must comprehend, through reading, short courses and consultation, the mathematics, hardware, software, and jargon of data processing. If left to itself the system really does not allow for much experimentation and thus tends to rule out innovativeness of middle- and top-management personnel.

So much then for housekeeping. Undeniably, we have marvelous tools that will get better but the use of these tools requires constant direction and redirection. In large, flourishing graduate divisions that are well down the road of the use of computers, quick checks can be made of the geographic origins of graduate students, the educational institutions represented, the effectiveness of admissions policies in various disciplines, and so on. Except, however, for isolated studies here and there, it appears that to date computers and attendant data processing are being used almost exclusively by graduate divisions for housekeeping chores. There is relatively little evidence of in-depth graduate studies that have been done by or under the auspices of graduate divisions themselves. The major theme of this paper is that many and varied studies should be undertaken with the assistance of computers.

Perhaps it can be said that the universities represent the finest and most delicately balanced accomplishments of man's struggle to make something of himself. If the graduate schools epitomize this accomplishment, as they influence and set the tone of the universities and in turn society, the shortcoming of the graduate schools must be defined, and studies leading to corrective measures must be undertaken. In terms of projected expenditures for national goals, we in education have been assured of moving from eighth priority in 1960 to sixth priority by 1975, with a threefold increase in funds provided. Within this rosy picture, large increases in the number and support of graduate students are included. There have been periodic blasts relating to shortcoming of the graduate schools by people slightly beyond the pale that have been published both in popular and scholarly journals. To date these have served as little more than minor irritants to the academic community. In the broader picture it is difficult to separate a widely-ranging current dissatisfaction with the academic community from the distress and concern for activist groups, but there is increasing evidence that society at large, as reflected by the actions or threatened actions of legislators, is becoming increasingly disenchanted by the results of the immediate past blank-check approach to academic programs with particular reference to the effectiveness of university research and collegiate teaching. The current Selective Service stipulations tend to confirm this.

There are, to be sure, broad philosophic questions relating to the growing inappropriateness of our German heritage of the model, structure, and functions of graduate education. These, however, are beyond the scope of this paper. Whatever some of the larger issues are, one of the objectives of our graduate schools has been to award advanced degrees to worthy candidates and there is no reason to suspect that this will change. What is most questionable is that we are not overly sucessful in this stated objective or function. Put baldly, our production of advanced degrees recipients is distressingly and, indeed, shockingly low in terms of the investment that our society has made. Have we for too long taken too much refuge in the inherent inefficiencies of assimilating and generating knowledge? Do we really have a defense for the terribly inefficient production or output of graduate degree holders in view of the large input of human and financial resources? Is there not every evidence of extravagant waste of the bright young talent called graduate students? The ratio of degree candidates admitted to degrees awarded over the years would certainly confirm these charges and we know that one of the difficult tasks we have is explaining why NDEA Fellowships have not had a particularly significant impact on at least improving the output situation.

Almost out of habit we repeatedly state that, in view of the increasing national need for advanced degree holders, more funds are required, more staff, facilities, and so forth. And we also assert that many new graduate programs will have to be instituted in emerging institutions and in institutions that are still on the drawing boards. Undoubtedly, parts of the presently existing system of graduate education will have to be expanded, but perhaps we should also examine how well we are doing with the resources we have, for we are headed for an era of more accountability to those agencies of society that provide funds. The threat here is that concepts of program budgeting and systems analysis are becoming increasingly familiar to federal and state budget officers and legislators. While we may be able again to continue garnering funds at the rate of five-to-eight per cent increases per year, as we did for much of the postwar period, a hard analysis of our productivity, as measured by output of advanced degree recipients, could be a strong deterrent to the continuation of this excellent base of support.

Suppose, therefore, that we ourselves and hopefully well in advance of others seriously question our productivity. What might be some of the causal factors that we accept or dismiss too easily? We know that there has been a flight from teaching and loyalty to institutions to the academic disciplines or professions with accompanying overly severe specialization. Beyond such charges as a lack of relevance of much of our teaching and research, we seem to sense occasionally that in much of our approach to and concept of graduate education we are continuing an outmoded guild or craft system that is devoid of holistic humanism, or a true unity of art, spirit, and science, to give meaningful human content to our institutions and civilization. To arrive at a concept of holistic humanism will take a lot of doing. Perhaps, however, some small start could be made by graduate faculties if they were seriously to question goals and procedures aided and abetted by computer techniques within systems engineering. For each discipline offering advanced degrees it can reasonably be asked, although it seldom is, what should be the output of degrees within various time spans consistent with inputs of faculty resources, graduate student resources, financial resources, facilities, research goals and obligations, and course offerings? For any discipline it would be difficult but not impossible to get something of a consensus of what these figures should be. Nonetheless, if these figures are low, and with noted exceptions they undoubtedly are, each of the essential elements of the input mix could be examined to improve the output figures and quality indices.

A realistic inquiry of this sort or even its suggestion would probably not be kindly received by the faculty. There is, however, considerable evidence to indicate that, while there is an inherent degree of inefficiency in graduate education, a vigorous inquiry would undoubtedly point up a decided lack of precision of alignment of resources to accomplish the stated objective of production of advanced degrees at least in individual academic areas.

Such analyses would reveal the apparent and readily recognizable inequities of lack of adequate numbers of staff people, as well as budget and space inadequacies. What is more difficult to determine, and indeed is almost relegated to the status of a taboo, might be the discovery and determination of faculty arrogance, ineptitude, and incompetence, either as single attributes or in combination with resistance to academic change. There are strong possibilities that these negative attributes do exist in individual faculty members, in wings of a faculty or in an entire faculty. Except by indirection we seldom concede that this is so and, except for the painful realities of occasional blowups, such faculty characteristics are dimly perceived but not related to low advanced degree production and varying definitions of quality. As always the human element is the most difficult to quantify.

An essential ingredient in the production mix that has only sketchily been studied is the graduate student component. Here again, there is the strong possibility that basic assumptions are not seriously examined or questioned. Perhaps somewhere, and this is as good a place as any, it should be stated unequivocably that we do have highly qualified advanced degree candidates. Sustained motivation may be something else, but there are many qualified young people who are at least interested in graduate work (there surely is a persistent loud knocking at our doors) and, while relatively few are in the super-star class that we all seem to be falling over each other to attract, there is every evidence of an ample supply for most of our purposes. One of the great mysteries of our business is that despite evidence of improved and improving instruction in the elementary, secondary, and undergraduate years there is a chronic shortage of both highly qualified and highly motivated advanced degree candidates. Parenthetically, this assertion is somewhat reminiscent of major league baseball's complaint that there was not enough big league player material for expansion to twenty teams despite the original franchises being formed when the national population was a fraction of the present population and before baseball was a major collegiate sport and before Little, Pony, and Ban Johnson play were invented.

Despite highly selective procedures for admitting students to advanced degree programs a large share of them do not succeed in the objective of obtaining advanced degrees. If it were to be stated that, say, two-thirds of them should succeed (or some reasonably higher percentage than succeed now), we would be forced to re-examine the diverse purposes of graduate education and determine if they are consistent with the needs of society and the clientele they are attempting to serve. An easy reaction would be to point out the need for devising more exacting if not more rigid admissions standards and to groom prospective advanced degree candidates in the tenth or eleventh grades. Instead of entertaining this more or less standard reaction, let's examine briefly the matter of half-heartedness or short-lived motivation of those students we have admitted. In this connection, we might ask such questions as how many students in what particular academic areas are subjected to unstructured programs that seem to be a nebulous concoction of odds and ends and bits and pieces? Is there a reasonable degree of expectation in an orderly sequence of developmental courses and research to the extent that relatively simple time-related logistics are brought into play? Are our most potentially capable citizens really those who can bury themselves in investigating some exquisitely minute detail of literature, social affairs, or science, to the almost total exclusion of realization of the state of the world as we find it or as it promises to be? Are the usual modest stipends just one cut above poverty? An increasing proportion of graduate students are married. What _is_ the housing situation? Do graduate students and their dependents have access to and can they afford medical, dental, legal and other services?

Or, to take another tack, have we swept the needs of professionalism and continuing education under the rug of definitions of abstract scholarship with the encumbent anachronism of residence within a community of scholars? And, so forth.

Thus, there are many inquiries that could be made and probably should be made that might substantiate the often-cited correlation of low advanced degree production with poor student motivation. In properly conceived studies the reasons for, as opposed to the stated fact of poor student motivation might be documented with a great assist from the computers. While it seems that many of the negative factors would have as their bases certain previous educational characteristics and cultural and social inadequacies, it also seems quite likely that many shortcomings would be found in the customs, methods, and viewpoints of the graduate community itself.

GRADUATE WORK IN THE NATURAL SCIENCES

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At first glance the topic, "Graduate Studies in the Natural Sciences," is so broad that it would appear impossible to make any meaningful approach in a limited time. Much has been written and said about this topic, particularly in recent years. No attempts in this paper will be made to provide adequate coverage of these discussions. Since this is a Workshop in which one assumes that a prime object is to promote discussion, I have chosen to build my comments most largely around observations, opinions, and possibly personal prejudices rather than attempting to make any scholarly or detailed analysis of what is a very complex and a very involved subject. I will make no attempt at providing novel insights or original syntheses, and probably on many points could be accused of laboring the obvious. I will attempt to concentrate most heavily on problems and trends which are either unique to, or very prominent in, graduate studies in the natural sciences as differentiated from the social sciences, or the humanities and the arts. A minimum of statistics will be used and these will be chosen only to put the subject in an appropriate perspective.

In all of these comments and in those that follow, I have taken the natural sciences to include the physical sciences, the biological sciences, and engineering since this is a natural grouping and conforms also to most of the statistical summarizations that are available.

Advanced study in the natural sciences has been a prominent, if not the dominant element in graduate study since its beginnings in the United States and, in fact, even before that when large numbers of scholars went to German universities to obtain higher degrees. The great public universities, particularly the Land Grant Universities, built their graduate programs largely around studies in the natural sciences throughout their first century, which paralleled a period of major growth and the emergence of graduate education as a central activity in all of higher education in the United States. The social sciences by contrast came into prominence in the Land Grant Universities much later and, in some, graduate study in the humanities and arts has only recently become numerically significant.

From the first, support by the Federal Government for graduate education and research has been directed almost entirely toward the natural sciences. Support for the social sciences, the humanities and arts, and education has only become significant in little more than the last decade.

In the most recent publication on earned degrees published by the U. S. Office of Education, it is revealed (Figure 1) that for the year

1966-1967, earned master's degrees in the natural sciences constituted 28% of all degrees granted. At the doctorate level, 57% of the degrees were in the natural sciences. The projections to the 1976-1977 academic year are that the proportion of master's degrees in the natural sciences will rise to 34% and the doctor's degrees to 60%. The topic that I have to discuss, then, covers 1/3 of all the graduate degrees at the master's level and more than 1/2 of all the graduate degrees at the doctorate level. It covers the fields in which the Federal Government is heavily involved and in which there is strong pressure for even heavier involvement and support by the Federal Government. And, finally, it covers fields in which there is not only very rapid expansion, but in which, additionally, an essentially new element, postdoctoral work, is coming into prominence.

Within these fields, recently published statistics from the National Research Council reveal some interesting trends. In 1968, doctorates granted in the physical sciences constituted 20% of the total of all degrees; the bio-sciences amounted to 16%; and engineering 12%. From 1960 to 1968, Ph.D.'s granted increased by a factor of 2.35 (9,734 to 22,834). Engineering Ph.D.'s increased 3.6x and physics and astronomy also exceeded the overall increase with a factor of 2.7. The broad bio-physics and biochemistry areas also showed sizeable increases, while agriculture and forestry, chemistry and earth sciences fell behind the average in the rate of increase. Chemistry, while still representing the largest numbers of Ph.D.'s in the natural sciences, has shifted in comparison with mathematics from 4 to 1 to the current 2 to 1; and in comparison with physics and astronomy, the ratio has shifted from a little less than 2 to 1 to the current approximate 1 to 1.

A few other interesting facts are revealed. The Ph.D.'s awarded in the natural sciences in 1968 went primarily to males, with women representing only 0.4 of 1% in engineering, less than 10% in most other fields, and no more than 18% in any of the fields. On the average, recipients of Ph.D.'s in chemistry and in mathematics are younger than in any other fields reported. The time between the baccalaureate and the doctorate tends to be strikingly shorter for the natural sciences than for the social sciences or the humanities and arts, but the shortest registered time is still 4.8 years for chemistry, equalled only, interestingly enough, by 4.8 years for economics. The longest registered time in the natural sciences is 5.6 years in botany and zoology, but the average still for all of the natural sciences is 5-1/4 years to achieve the Ph.D. degree.

Probably the most striking figure to be derived from the statistics, although it comes as no surprise, is that with the exception of mathematics, botany, and zoology, fewer than 1/4 of the new Ph.D.'s move into teaching, while 1/3 to over 1/2 go into R & D activity, much of it outside of educational institutions. For example, only 1/5 of the chemists, 1/3 of the physicists, less than 1/3 of the engineers, and 1/4 of the biochemists and biophysicists find their first employment in universities. On the other hand, nearly 70% of the mathematicians, over half of the botanists, and zoologists, and over 40% of the earth scientists find their first employment in the educational institutions. By contrast, in most of the fields in the social sciences and humanities, 80% to 90% of the new Ph.D.'s go to work initially in an educational institution, a corresponding proportion engages in teaching, and very small numbers engage in research.

Pattern of Support

Another striking feature distinguishing graduate programs in the natural sciences is the pattern of support. Recent data presented by the National Science Board reveal that in the Fall of 1966, of all the students in science and engineering, 23% held teaching assistantships, 22% held research assistantships, 19% held fellowships, and 11% held traineeships. Thus, 3/4 of all of the graduate students in the natural sciences hold assistantships, traineeships or fellowships, with the latter two combined representing 30% of all students in these fields. Identifiable federal support amounted to 37% of all of the students in these fields. It is well known, of course, that in many fields, such as Physics and Chemistry, and in some of the agricultural fields, practically all of the graduate students receive support. This is in marked contrast to the social sciences and the humanities and arts where sources of support are not so readily available.

It is a curious coincidence that the proportion of students holding teaching assistantships while pursuing their degrees is roughly the same as the proportion of new Ph.D. recipients who move into teaching. It would, of course, be fallacious to suggest that most of those holding teaching assistantships ultimately teach. What is probably more significant is the indication that an increasing number of departments require some teaching experience of all of their graduate students whether or not they receive remuneration for the teaching, or regardless of their professional objective. The motivation appears to be the rather commonly held view that teaching experience is valuable to anyone preparing for a career in the sciences whether or not he will ever teach. Secondly, it is commonly held that such experience may help encourage more students to continue in teaching and to provide valuable background for those who will find their careers in teaching.

A final, but of course well known, distinguishing feature of graduate programs in the natural sciences is that they are very strongly research-oriented, requiring costly and extensive laboratories and facilities. In many fields, increasingly, the student finds himself as a part of a large research team to which he contributes, rather than following the traditional pattern in which he stands in an apprentice learner-teacher relationship with his professor, where an original hypothesis is presented, then tested and demonstrated with all of the academic and scientific rigor he can bring to bear. The concomitant is, of course, high cost and, in some fields such as high energy physics and certain phases of the space program, even the largest universities cannot provide adequate facilities. For these, the students must travel to large national laboratories to gain access to the necessary large, expensive facilities.

Having discussed some of the distinguishing features that characterize graduate work in the natural sciences, we should turn our attention to the developing trends and changing philosophies which either are occuring or for which there is strong pressure for change. Of immediate interest and concern is the changing pattern of governmental support and the mounting pressure for the Federal Government to assume an even larger share of the total cost of graduate education in these significant fields. Few, if any, question that the present reductions in Federal support are anything other than temporary, and all of the indications are that the

Federal Government will essentially "take over" the massive funding needed to meet national needs in these areas. There is now before the Congress a bill which has received considerable support, which would provide for institutional grants to support graduate work in the sciences (including the social sciences).

A most significant development has been the recent issuance of a long-range proposal, Toward a Public Policy for Graduate Education in the Sciences, by the National Science Board. I need not attempt to summarize what is presented in this and its companion publication, Graduate Education--Parameters for Public Policy, since these have already been widely read and discussed. It is predicted in these publications, however, that the number of graduate students in the sciences will double in the next decade and that the costs will quadruple. It is stated that this striking expansion is clearly in the national interest, that these needs must be met, and that only the Federal Government can provide the necessary support. If these goals are met it will be necessary to meet them with students already enrolled or about to enroll in universities and colleges. A major expansion will have to come most largely in those institutions already heavily involved, competent and productive as producers of Ph.D.'s in the sciences. This is not to discourage emerging institutions from expanding and increasing their capabilities, but an expansion of this magnitude can only be accomplished within the stated time for the large, established universities. Included in the recommendation also is a suggestion for complete financial support for all graduate students who are capable and who wish to continue their progress toward advanced degrees. Additionally, it is proposed that the student's stipend should be regarded as a means for his personal support, not as a fee for service. In terms of the 45% of our students holding assistantships, this is revolutionary indeed.

These proposals undoubtedly are of great significance, especially coming at a time when state sources for publicly supported universities and private, industrial, or foundation sources for support of private and public universities seem to be sharply restricted. If the proposed support is provided, college and university administrators will find that new procedures and new priorities will come into effect; the importance of project grants will decline and institutional grants as an outright federal subsidy will become even more important than they now are.

Direct federal control of graduate education does not now appear to be a threat and there should, at least initially, be a marked increase in institutional autonomy. Overall, however, it is almost certain that the total sturcture of graduate education in the sciences will change in ways to make it more responsive to the national interest and requirements, and less under the control of academic institutions. A careful study of the documents referred to is indicated since they will almost certainly have a profound effect on the directions graduate education in the sciences will take in the decade ahead.

Another even more recent development calling for centralization of federal science activities is incorporated in proposals for establishment of National Institutes of Research and Advanced Studies. A report of a significant and detailed study has recently been issued for the Subcommittee on Science, Research, and Development of the Committee on Science and Astronautics of the U. S. House of Representatives. The title of this report is

Centralization of Federal Science Activities. Again this deserves the most careful study and discussion. What is proposed is to create an independent agency comprising the National Science Foundation, the National Foundation on the Arts and Humanities, the National Institutes of Health, and also including four new organizations to be created--The National Institute of Ecology, The National Social Science Foundation, The National Institute of Applied Science, and the National Institute of Advanced Education. Brought together under this one organization would be some of the national laboratories, some of the basic research programs of existing agencies such as the Atomic Energy Commission, and most of the activities of the U. S. Office of Education relating to higher education. It is, of course, too early to predict how this will go, but it is clearly another indication of current thinking in Washington directed toward providing massive support for graduate studies, not only as an extension of the traditional support provided in the sciences, but extension into and an increase in support for work in the social sciences and the humanities and arts as well.

Growing out of these potential Federal developments and out of other pressures which already exist are several significant changes which challenge the traditional patterns of graduate education. One of the most evident and, to some, the most revolutionary of these, at least in the natural sciences, is the accelerating trend away from the traditional, uniform language requirement and toward greater departmental autonomy. This comes in recognition of the changing needs in different fields, the changing patterns of communication between investigators, and the emerging capabilities of computer-based systems to provide literature search and identification. Additional factors are the growing adoption of English as the international language of science, and the increasing necessity to devote a full period of time to graduate and advanced studies in the student's field rather than to making up deficiencies in undergraduate preparation in language skills. An adequate knowledge of more than one language is of course desirable and essential, but acquisition of such knowledge should increasingly be placed where it belongs--at the pre-baccalaureate level. Such knowledge can then be made a condition of admission into graduate study. Traditionalists may bemoan the passing of the uniform standard but, increasingly, experience shows that where departmental decision may be exercised, more meaningful and applicable requirements result.

Related to this is, of course, the extremely rapid emergence of computers as essential tools in all fields of research, particularly in the sciences, and the necessity for students to learn computer languages and an understanding of how the computer may serve them in their chosen disciplines.

The impact of the computer on graduate programs in the sciences could itself be the subject of a major discussion. Most significantly, it has made possible the undertaking of studies formerly inappropriate at the doctorate level because of the masses of data to be handled and the extensive computations to be made. This is not, however, an unmixed blessing because too often sheer volume of data or print-out may obscure the need for insight. We may welcome the relief from drudgery provided by the computer, but we should require the graduate student to pay more attention to relevance and to significance than to manipulation.

Immediately, two administrative problems arise: 1) How to provide support for the expensive computer time each graduate student feels he must have, and 2) Should one accept, or rather, is there any reason one should not accept, a dissertation printed by the computer or including extensive computer print-out material? Just here is an excellent place to utilize institutional grant and educational allowance funds, and computer print-outs should be acceptable if well done, since this is now a basic communication medium in the sciences holding many advantages over the typewritten page.

Another change which should be encouraged vigorously is the trend toward shortening the time required to achieve the Ph.D. degree. Our university catalogs usually state that a minimum of three years is required to earn the degree, yet the average for all fields in the sciences is five years or more. In some fields it has become the custom almost to point with pride to the 5 or 6 years usually required, as if somehow this bestowed particular merit on the long suffering student. There are two compelling reasons why doctorate programs, and in some cases master's programs, should be shortened and it should be kept in mind that the needed shortening will not require any change in graduate college requirements in most institutions, but will require a change in attitudes and requirements of individual professors and their departments. Here is a key opportunity and challenge for Deans to play a leadership role.

Broadly, the reasons for the shortening are: 1) a developing philosophy of graduate education in the sciences puts first emphasis on training in research not on specific techniques. This no longer justifies long programs where often boredom sets in to dull the fine edge of enthusiasm and excitement that should characterize the first experience of young students entering into careers in science. 2) Heavy demand on limited facilities, support funds, and faculty time make unduly long programs a "luxury" that neither the institutions nor the country can any longer afford. Under the original philosophy that the doctoral thesis must represent an original, creative investigation which would stand as a distinct contribution to the field, problems of broad scope were frequently undertaken and it too often was necessary to devote long periods of time to complete the study. Increasingly today science is "done" by interdisciplinary teams and it has become appropriate and necessary for graduate training to reflect the realities. One hopes always that the doctoral dissertation may represent a landmark contribution, but in most cases it represents a contribution to an ongoing project in which the student hopefully learns through his own personal involvement the methodology, the philosophy, the techniques, and the limitations of creative work in a scientific field in which he is about to embark. An appropriate, productive, and thoroughly acceptable experience as a participant in first-rate research need not require 4 to 6 years.

Departments have justified extended programs on the basis of necessity to present large volumes of additional material in class, but students are coming to our graduate colleges vastly better prepared than formerly, more sophisticated, and ready to move actively into research activity. With the development of computers and seemingly innumerable "black boxes," much more can be accomplished in a short time than was formerly possible. As a final clincher, developments are occurring so rapidly in most scientific fields today that there is hardly time to wait for the traditional publication of results in the journals. At the forefront of the field, where students should get their first exposure, there is much communication through reports, participation in symposia, and direct personal contact both nationally and internationally, and most fields today are developing too rapidly to accommodate a student whose program is strung out over too long a period of time.

In the other area relating to the limitation of resources, the forces suggesting shortening of programs are so obvious they hardly need enumerating. If the national goals already enunciated are to be met, or even partially met, our resources will be strained to the utmost. It is one thing to talk of doubling graduate enrollments in ten years, but the required expansion in facilities will take time to accomplish, and no one has yet come up with a scheme to produce instant faculties of high quality. It takes no mathematician to see that the establishment of a four-year norm would allow us to provide for 20% more students than would the prevalent five-year norm, even without a marked expansion in facilities and faculty. There will be those who will claim that an attempt to shorten is an attempt to cheapen the Ph.D. so that it is a "quick and easy" degree, but the burden of proof should be placed on the critics to demonstrate that additional years really contribute anything to the training and development of the student beyond just adding more of the same. There are some encouraging indications that programs are being shortened, but more needs to be done to bring this about. The most effective means at the graduate dean's disposal, if he could bring it off, would be to place a limit of four years upon support that can be provided a student through any institutional resources whether in the form of fellowships, assistantships, part-time instructional or research positions, and to hold rigidly to a five-year limit for completion of the Ph.D. beyond the baccalaureate. Faculties initially tend to view such proposals as heresy, but frequently will become staunch supporters when they put their collective minds to developing the best possible program within the indicated time limits.

Since most of the shortening I am advocating might come in the research component, this should be given additional consideration. Graduate study in the natural sciences continues to be heavily oriented toward and built around research. This is as it should be--and must be. Science by almost any definition is concerned with development of new knowledge and new understanding. If one is to follow a career as a scientist, research must become a way of life, with involvement to begin with the beginning of graduate study and maintained throughout one's productive career.

There are those who argue now that graduate study in the natural sciences is too heavily oriented toward research, that research is too time consuming and too expensive, and that only those who will follow a career as full-time investigators should be held to such a requirement. These, in my view, are arguments with little merit. Admittedly, the research required has been, in some cases, too drawn out or unrealistic in terms of what the student has been expected to accomplish, but this calls for reform not abandonment of research as an essential component of graduate study. Admittedly, those who will teach in secondary schools, in junior colleges, or in four year colleges (if there be any that are not expanding to provide graduate study), may not profit most from involvement with highly sophisticated projects utilizing massive facilities. And it is frequently held that engineers are not scientists and, since they deal with productive application of the developments in science, they should not be required to participate in an activity which will never be a part of their professional careers.

These are issues which will be debated vigorously, probably for some time to come, since the pressures to reduce or eliminate the research component will surely mount. These are issues on which we as graduate deans will be expected to provide leadership and upon which we must certainly take a position. The position I take is probably already clear. If science is research, then one cannot properly teach science without an understanding of research, its methodologies, its limitations, its rewards and excitement, and the opportunities it provides for creativity and for original or independent thought and action. No way has yet been found to convey this understanding equal to a personal involvement in research, limited in time and scope though this may be required to be. If a teacher of science does not have some understanding of research and if, in fact, he does not in some degree continue his interest and involvement in research, his teaching will soon become sterile and uninspired. Any man utilizing the results of science, whether as an engineer or in one of the many science-related industries must, if he is to be effective, have a good working knowledge of research. This can only be gained, in my view, by having at least once himself engaged in a research experience. The research experience need not be too demanding in terms of time, but there should be no compromise on rigor or objectivity. Participation in a large project where the student is a member of a team can be acceptable if this is the nature of the current research being done in the field. We should do much more than we have done to bring the research undertaken more in line with the interest and career objectives of the student. Some modification of the research requirement may be called for, but abandonment is certainly not the answer.

I repeat, but only to reaffirm: Research is the heart of graduate work in the natural sciences. Elimination of required research from master's programs may reduce such degree programs to little more than the seventeenth year of formal instruction. Some of the recently introduced intermediate degree programs are movements which tend toward minimizing the importance of research and to encourage postponement of the research until after all other requirements have been met. In my view, this is a mistake and students should be involved to some degree in research from the initiation of their graduate study.

The emergence of postdoctoral work as an informal requirement for students seeking research careers in certain fields has posed some problems of funding, but it has provided a needed opportunity for the high degree of specialization and complete immersion in research activities which we cannot, and in most cases should not, attempt to provide or require for all of the students who are seeking their degrees in a given field. Some have proposed that a super degree be created to recognize completion of postdoctoral study, but this, in my view, would be unwarranted. To create such a degree would relegate the Ph.D. to an in-course, second-class degree. This would be most unfortunate indeed. For those few students who have the qualifications and the dedication, and who can find the support and the positions to continue into postdoctoral study, the additional experience and training are their own best recommendations. It is questionable whether any additional luster would be added by degree designation for such experience.

One final topic for discussion relates to the increasing pressures for change or for reconsideration of the traditional concept of residence as a component of graduate degree programs. Strong arguments are being raised, particularly in certain fields in engineering, that universities should expand their graduate offerings into company or community facilities away from the main campus to serve those who are employed. Comparable, but not exactly similar, justification is presented for authorizing scientists in large government research installations to teach and for the organization to award graduate degrees. Expanding need for continuing education and for lifetime involvements with the university make ever more certain the probability that we will be pressured to award graduate degrees for such programs. There is merit to many of these arguments, but a strong case can be made for benefits to be derived by a student who will immerse himself full time in the academic environment, work in close collaboration with his major professor and with other students, and who will take full advantage of the opportunities presented for exposure to other disciplines, methodologies, and fields of research which can be provided only to residents on the campus of an academic institution. It will be necessary to recognize the need to provide continuing education both on and off campus, but we need to promote acceptance of the idea that all graduate work is its own justification and need not necessarily lead to an advanced degree. If there is merit to the proposition that on-campus resident graduate study is significantly different from off-campus, in-plant study, then a different degree recognizing off-campus activity should be created and adopted recognizing that there are different kinds of programs designed for different people to meet different needs.

In summary, the situation in graduate study in the natural sciences seems to be that there needs to be much, much more. The proportionate increase may not be as great as in other fields, since the starting base is already very high. Training in the specific techniques or procedures of a given field is no longer adequate if, in fact, it was ever adequate, but what our goal should be is to provide first-rate experience of science so that the student may be best prepared and qualified to move into and with his science however it might grow and develop. On this base, programs could be shortened and thereby made more effective while continuing to be as rigorous or even being made more rigorous. Graduate education in the sciences and in engineering is expanding and changing almost explosively and the rate predictably will increase. New fields will open up, new tools will be developed, new specialities will arise, and new problems will be generated for those who have the responsibility of guiding and administering graduate programs. It is a challenge that can be met by the expenditure of a maximal amount of energy, flexibility, and creativity, undergirded by an absolute commitment to high quality. I am confident we will meet that challenge.

Figure 1

GRADUATE DEGREES EARNED IN 1966-67
AND PROJECTED FOR 1976-77
(U. S. Office of Education)

Masters Earned

		(X 1000)	(%)	
1966-1967	Physical Sciences	11.8	9.1)	
	Bio-Sciences	9.7	7.5)	36.6 = 28.2%
	Engineering	15.1	11.6)	
	Humanities	19.6	15.1	
	Social Sciences	13.2	10.2	
	Education	43.2	33.2	
	Miscellaneous	17.2	13.3	
		129.8		
Projected 1976-1977	Physical Sciences	29.4	12.1)	
	Bio-Sciences	17.6	7.2)	83.0 = 34.2%
	Engineering	36.0	14.9)	
	Humanities	39.8	16.4	
	Social Sciences	29.2	12.0	
	Education	54.5	22.5	
	Miscellaneous	36.2	14.9	
		242.7		

Doctors Earned

1966-1967	Physical Sciences	4,000	21.5)	
	Bio-Sciences	3,890	20.9)	10,540 = 56.6%
	Engineering	2,650	14.2	
	Humanities	2,270	12.2	
	Social Sciences	2,270	12.2	
	Education	2,620	14.1	
	Miscellaneous	910	4.9	
		18,610		
Projected 1976-77	Physical Sciences	8,200	21.3)	
	Bio-Sciences	7,330	19.0)	23,190 = 60.2%
	Engineering	7,660	19.9)	
	Humanities	4,740	12.3	
	Social Sciences	4,240	11.0	
	Education	4,610	11.9	
	Miscellaneous	1,770	4.6	
		38,550		

GRADUATE STUDY IN THE SOCIAL SCIENCES

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With some trepidation, even among you experienced mediators between disciplines, I have selected for consideration certain fields that I consider social sciences. Basically I have used the list under that rubric in the National Research Council publication Doctorate Recipients from United States Universities, 1958-1966. I have made some condensations of their categories, however, and have felt it urgently necessary to add one field they put under the Arts and Humanities rubric, namely Linguistics. The fields are indicated below, with total number of U. S. doctorates granted in the period 1958-1966:

Anthropology (incl. Archeology)	634
Area Studies	25
Economics (incl. Econometrics)	3,995
Geography	527
Linguistics	487
Political Science (incl. International Relations)	2,629
Psychology (incl. 16 sub-fields)	7,975
Social Work	311
Sociology	1,699
Other (incl. General Social Science)	179
	18,461

These figures compare, at minimum, with the figure of 6,606 doctorates in Physics and Astronomy in the same period, and 4,251 in English and American Language and Literature then. In general the social sciences are well below the physical sciences, slightly below education and the biological sciences, and slightly above the arts and humanities and engineering for the period. Latest (and probably unsubstantiated) indications are that there is a drop in physical sciences, a rise in life sciences, a possible rise in social sciences, and some indications of stability in the humanities.

Again, at some risk from those of you who may be more expert than I on the subject, I can assay some general characterization of the social sciences, a very personal one of course. In the first place these fields have all come more or less lately out of philosophy into science, and some of them still tend to be involved in rhubarbs of definition and limitation, as currently in political science. In the second place they are still uneasy about the focus of their subject-matter, which they now agree is for them man, sometimes embracing woman. Theoretical assumptions about human behavior or human nature are absolutely essential but are still not developed to the desirable level of gentle disagreement as they are in the hard sciences. Even the term behavioral sciences has not yet gained general acceptance. To many of you, behavioral sciences, because of remaining ambiguities in their approaches, are "would-be sciences."

I think, however, that this battle of the quibble has been lost, for each of the fields listed above has many practitioners who are busy applying stochastic scientific methods to human behavior with increasing sophistication in methodology, techniques, and interpretation. No politician will now move without his pollsters, and I understand that here in California you have developed the automatic campaign. The 2,766 degrees in Clinical Psychology embedded in the figures given above testifies to the market for lay shrinks. Federal and foundation support for social behavioral research and traineeship grants is second only to that for physical and biological sciences. Large numbers of new courses and more finely divided umbrella departments are annual occurances in academic institutions. A major intellectual and social problem of our day is the effect of social science interpretations on current but traditional customs and beliefs. The biologist Kinsey, it may be noted, picked an anthropologist as his successor.

In many of these fields the world is the area for study. Led in time by the anthropologists and now in numbers by the political scientists and the economists, the social scientists of the western world far outstrip other rubric-fillers in their interest in the world beyond the North Atlantic basin. The development of a graduate social science program will inevitably lead you and your faculty to involvement in some form of approach to study of exotic parts of the world, although you may still be safe if you keep to sociology and psychology alone. The Department of State reports that, in fiscal 1967, $40,600,000 was expended by the Federal Government (outside of itself) for social and behavioral research on foreign areas and international affairs.

Social science programs cost money. Not so much as do hard science ones, but more than those in the humanities and moreso as their hard science increment grows. Staff grows increasingly expensive as demand grows, and laboratory, computer and other facility-needs are considerable now. More released time is required for research, for overseas field work, and for consultation, which cannot so easily be added to the effort expended in classroom course offerings as it was in the past. I well know that a reasonably good new anthropology program needs as much laboratory space as does the psychology department, and the anthropologists can find more excuses to stay away in the field than all the others put together.

Between 1958 and 1966 all the social science fields grew rather slowly after earlier rapid developments. Anthropology was the late-comer and is apparently still growing rapidly if the list of new departments is any indication. In my own university the numbers and the good quality students are definitely in the humanities while, in most other universities, the sciences predominate in like fashion. My friend in the record department, however, tells me that, although most up-to-date enrollment figures do not show it, he is convinced, as I am from more intuitive bases, that the data will soon show larger accretions in the social sciences at the expense of the humanities. The move is a slow and reluctant one, because the good students, in other than the hard science-mathematics community, are still interested in the established fields of history, philosophy, and language-literature. These disciplines represent, in the four-year college tradition, the core of prestigious academic life; their teachers are the role models for the traditional good undergraduate students. To many they are still symbols of mobility success in stable American life.

But these teachers, the subjects they teach, and what they teach in them, are all now firmly defined as the Academic Establishment, with all its negative connotations. Hard as it is for me to describe in concrete terms, there really seems to be, on the part of the students, an intellectually-based questioning of the worth (I hate to use the word "relevance") of the traditional humanities subject matter and its hardened specialites. Beyond questions of revolutionary nihilism, easy degrees, instant mobility, bad teaching, black experience, participatory democracy and other such evident problems, a search is emerging for broader contexts for the considerations of human experience. At N.Y.U., because of the breadth implied in the field, our graduate Comparative Literature program is becoming overwhelmed by excellent transfers from English and other language departments. In a sense these people are still put off by the austerity of their image of science and its supposed boundaries, but somehow they have a need to experience the actual wider ordering of contexts which the sciences afford. The need may even be an unconscious one, for the essential security of knowledge is that there is no absolute truth nor real boundary to knowledge. The social sciences, including linguistics, if they are not too self-consciously operational, and if they maintain humanism as a value, can in this trend be more attractive than they now realize.

The reaction to this movement, on the part of the wisest of those in the humanistic fields, is to widen the contexts of their teachings, to include the by-now almost hackneyed culture concept, to try to include the content, at least, if not the style of Chinese and Swahili writings in Comp Lit, of folklore and music in German, of psychological or Marxian interpretations in History, or English Lit courses. But the reaction to this reaction is in some places also very strong indeed. One has only to examine the history of the introduction of descriptive and then transformational linguistics into the traditional language departments, to see reaction to reaction in operation. I think reform is not working fast enough to save the humanities as we know them, but I hope Peter Elder can relieve our Angst on this score.

I recommend that you prepare yourselves for growth in the social sciences, particularly in anthropology, political science, possibly in sociology, and possibly in economics. You will also have to hold the line in psychology if you are not already doing so. Again I would recommend that you try to straighten out your inevitable tangle with the new linguistics science, which will be quite an education for you if you are not already into it. In spite of the current climate of opinion on international ventures, I might even recommend that you look into some small imaginative joint development between departments, between schools, or even consortia with some other institutions, that will provide a widely contexted approach to some foreign area that everyone else is not working on. My personal inclination is to go slow on separate programs or departments for either black studies or urban studies for a while yet, unless you can be sure that you want them in your organizational network for the next ten years, and unless you can be sure that you have some valid conceptual approach for dealing with the conflicting inchoate interests that each of them now displays. It is better to let the stern process of intra-departmental course politics prove them to be viable new ventures, rather than to test them in the marginal soil of separate organizational units. Schismogenesis is a traditional process in academic departmental structures and, when a course offering has good enrollments, yields tuition income and finds faculty support, it is difficult to keep it from separating and developing an empire.

These, then, are some general comments on the social sciences and their trend towards proliferation in graduate study. Although no man can be an expert in all things, let me now pass to a few separate departmental fields in which I have had some experience. The first is anthropology, which is new enough still to be confused with sociology by some. Here the initial problem is gaining a wide well-supported context, for a valid anthropology department must contain staff resources--and labs and library--in at least four separate approaches: social or cultural, physical, archeological, and linguistic. In addition, your anthropologists will inevitably be after you for world-wide regional balance in their program. They will want a man dealing with the Far East, another with Africa, and so on. Such a program outline comes close to sociology only in the social or cultural specialty, and even here sociologists and anthropologists seldom speak the same language or read each other's papers. For this reason I can hold no brief for attempts to found sociology-anthropology departments, nor to even try to maintain them. Schismogenesis is built into this picture. You will have to watch your anthropological linguistics man if you have one; he will probably be the gadfly in your linguistics muddle, seeking to found a true linguistic department based on some social scientific model. You must also, as I mentioned earlier, plan on more travel leaves by your anthropological staff than in any other department.

In economics I gather that currently there are three main emphases, the theoretical econometrics one, the developmental economics one, and the finance-money one. There are others of course, but I am told that time has put them somewhat into the shadows. Obviously you must have the apparatus of computation and statistics for the operation of the first emphasis. The other two sub-fields provide expression for entrepreneurship, for research-travel and consulting for your development people, and for even more lucrative consulting for those who help the business world with its problems. Doubtless, some of you already have problems with the relation of Economics to Graduate Business Administration.

Geography, after having gone far out on a path which made it almost a branch of geology, has now returned to the recognition of ecological relationships between man and land, which qualifies it as a social science. The results emerge as inter-disciplinary, closely connected with economics, sociology, anthropology, and even politics, all defined as human geography. Another branch of the field, however, is so highly technical as to be almost a branch of engineering, connected with photogrammetry and other methods of instrumental exploration. The field will not grow to large dimensions, I think.

Linguistics, as I mentioned earlier, is a can of worms for the academic developer, because its immense potential value is such that all fields which have any possible claim to its content are frantically seeking linguistics experts--language, anthropology, and psychology departments claim at least a share, as do those of classical philology, speech pathology, speech education people, and those in TOEFL. With all of this, people actually in scientific work, either in the older descriptive linguistics or the newer transformational approaches, are so rare and difficult to identify, that it is small wonder that few well-defined programs or departments have thus far emerged, although the signs point to the inevitability of many more. I personally hope that some more of you can work this one out. We critically need the scientific advances possible here.

Political Science (government, politics, international relations) is a monster in the social sciences, exceeded in size only by psychology, but perhaps embracing wider fields of enquiry because of the still voluminous nature of its historical and philosophical aspects, and its close relations to law and public administration. Long a core subject in the old four-year college humanities, its transformation into a social science has been slow but always well endowed with undergraduate majors and graduate enrollments. Now, harried by charges of establishmentarianism, political science has more rapidly developed toward central emphasis on what might be called political social psychology, with all the paraphernalia of social surveys, statistical treatment, and psychological interpretations. Even more recently this approach has been extended to numerous overseas studies, sometimes with Camelot-like results.

Psychology, with sixteen sub-fields in the N.R.C. description, is by far the largest social science field. More roughly divided, its branches would seem to be four in number: clinical, educational and testing, experimental, and social. A fifth field of some importance in urban areas is industrial psychology. Clearly many of these fields are applied rather than basically scientific in nature, although the teaching in those departments I know is closely connected with fundamental research activities. Far be it from me, however, to provide you with very much meaningful information so near the end of my allotted time. You must wrestle, yourselves, with the conflicts between the clinicians, the experimentalists, the pure scientists and the educationists. Viable administrative organization of the fragments remains the problem.

Similarly, I will have to leave you the sociologists, who have philosophical problems comparable to those of the political scientists, although they came more early to science as a model. They have less support from the public, more concern with what they call social problems (as a separate sub-field) and less interest in extending themselves overseas. They sometimes overlap with the political scientists, with the psychologists, and with the anthropologists, but they can usually be counted on to provide eager resources for urban affairs programs or minority group ventures.

Clearly, I have only touched a few issues of importance to your concern with graduate social science. My most fervently expressed point--namely for you to get ready for increased activity--is not yet solidly backed by the kind of data even a good social scientist would wish for, and you may have also noticed that perhaps I am more of an anthropologist than a social scientific statesman, but I urge you to be well aware of the subjects I have touched on; you will need the information.

GRADUATE STUDIES IN THE HUMANITIES AND ARTS

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I take it that what I say here this morning is meant to be of use in a discussion this afternoon. I shall therefore suppress a weakness for rhetoric and, instead, try to be down-to-earth and thrifty of word. It is, I assume, my job to raise questions and touch upon many topics, in the ovular hope that if many eggs are broken at least a few omelets may emerge.

Now, as for graduate education in the Arts, the creative arts, I ought at once to report that I know nothing about the business, save that a few years ago I strongly supported our allowing a Ph.D. thesis in Music to be an original musical composition. My ignorance about Ph.D. programs in the creative arts does not, however, necessarily reflect hostility, and on this whole matter I somewhat skeptically hope to learn something from the afternoon's conversations.

So, to come to the Humanities, I should first define them. This I can do easily, by simply agreeing with my colleague Cedric Whitman (*Daedalus* 1969) that for us in the United States the Natural and Social Sciences make up the Establishment, and that the Humanities are everything that's left over. The Roman concept of *humanitas* doesn't really come into the picture, for *humanitas* was the defining quality of a cultivated Roman gentleman, and no cultivated Roman gentleman would have been ignorant of the scientific knowledge of his day. Einstein, by the way, was *humanus*; he read Thucydides regularly. If, though, you are looking for an inspirational and not a residual definition, I could proclaim the Humanities as those studies which nurture an individual's independence within the constraints of tradition. How vainglorious might be such a boast, since possibly any first-rate natural or social scientist would make it too.

Now that we have leap-frogged over the matter of definition by being loose, let me--I think this will ultimately be of value--let me remind you of another looseness that marks humanistic disciplines. And healthily so! This has to do with the lack of any clear-cut order or system or *ratio* in their scope or range.

A discipline in the Humanities may spread its net in all lands and through all recorded time. Philosophy, Music, Linguistics, or Fine Arts come to mind. Another humanistic discipline may stake out for itself a period in time, and then--some would say arrogantly--claim that everything that was made and thought and happened within its *termini* belonged to it, even though the disciplines I just mentioned might object. An example is Classical Philology, whose students cunningly pry into everything from literatures and histories to Bronze-Age tools and Roman sewers.

Or a humanistic discipline may stick to a single concern, from that concern's veriest beginnings down to this morning. English or Celtic comes under this rubric, and so, but in a more generous territoriality, do Romance or Germanic Languages (which, incidentally, must cope with English and Celtic).

Furthermore, a discipline in the Humanities may busy itself with an area, say the Middle East, and then it may pick and choose within the elements of that area as it wishes. It may concentrate, in the case of the Middle East, on things modern, but dig not only into language, but also into political history, economics, public health, etc. Or it might prefer to keep itself to Hebrew (or, better, to Jewish history), but embrace the whole self-examining realm of classical, mediaeval, and modern Hebrew. But then archeologists, too, stake out their illuminating parcels in the Middle East. So do theologians. So do many others, all correctly calling themselves humanists.

Enough of examples of diversity in the patterns of humanistic "fields." At this point I remind you of the "residual" nature of the so-called Humanities, and I tell you that this diverse quality in humanistic programs is salubrious, and that it is useful.

Useful, because there are, in the area of the Humanities, no traditional restraints against inter-disciplinary programs framed in all sorts of different ways. Most of the humanistic disciplines are old and intimate friends with one another. This inherited licence in structuring programs in the Humanities permits us easily to set up new inter-disciplinary programs, some of which may even bear upon great contemporary problems. It is purblind marcescently to say "This is how we've always done it and we're not going to change now and admit new programs." What silliness! In the other two major areas, inter-disciplinary programs are popping up and being embraced, and generally rightly, and they should be welcomed too in the Humanities. But two things ought to be kept in mind. First, that we must go on maintaining the traditional disciplines, and, second, that we insist that the new programs have scholarly rigour and not be just bull sessions on today's problems or be devoted just to the literature of 1969. We need History's critical perspectives.

Innovations in the Humanities can be rewarding, and exciting, and graduate deans should encourage them, but see that they are based on hard, solid, and exacting foundations and not on contemporary fadistic pressures.

For example, I should like to see devised a Ph.D. program on France, a program which would treat that splendid country as we already treat the Soviet Union or the Middle or Far East, viz., as a regional unit. We would study not merely its literature, but also its history, its economics, its art and architecture, its journalism, its philosophic speculations, and perhaps even its subliminal fondness for royalty. The traditional study of French literature plainly needs a shot in the arm. We turn out today more Ph.D.'s in French History than in French Literature. The reason is pretty clear; and we should do something about the situation. I am, let me hasten to add, assuming that the students in my hypothetical program would already be firmly grounded in at least Western European history.

Or, to offer other examples, a similar program might be proposed for Austria--its social, political, and artistic history--and Austria in turn suggests such a program devoted to the world of Islam (though one would have to weigh what effects concentration on Islam would have on the unity and centrality of Middle Eastern Studies).

But proposed innovation must be scrutinized tightly, and so now I should like diffidently to tip-toe toward that latest goddess enshrined in our pantheon, **Relevancy**. Favete linguis!

What should be the role of the Humanities vis-à-vis our contemporary problems of "pollution, disburbed ecological balances, diminishing natural resources, overcrowding, poverty, famine, noise, loss of privacy, war, crumbling social and political institutions, and other similar ills?" The question has been movingly put by Dean Richard Predmore (Proceedings of the Eighth Annual Meeting, Council of Graduate Schools, 1968, pp. 148ff.), and he has suggested some possible reforms in our humanistic programs, such as colloquia devoted to the relation of a discipline in one major area to other disciplines in other major areas, or, in this same direction, a one-term broadening course for students in the Humanities (e.g. Humanistic Biology, Science and Human Values), or, assuredly to enlarge perspectives, a required minor field (outside of the area of the major field).

I am not going to argue that the Ph.D. in the Humanities already takes too long, and that such outside pursuits would merely stretch it out farther. I doubt that they would. Nor would it be fair to Dean Predmore even to imply that such outside pursuits need weaken a student's professional training in his chosen field. He no more wants that than do I.

Nor am I going to argue, though I am tempted to do so, that it is a bit hard to see how some humanistic disciplines can directly respond to contemporary problems without abusing, as it were, the sacred integrity of the discipline itself. I for one don't see what a musicologist is to do with Palestrina and our present social troubles, unless maybe he drag in the ecumenical movement. A professor of Fine Arts could, I suppose, point out that in The Burial of the Count Orgaz El Greco through his cold colours and gaunt figures reveals the Spanish character--the bull ring, the rope, the poison, the easy stab. It is beside the point to say that Franco is fat, but it is not beside the point to say that the professor's primary concern is to analyze El Greco's techniques and what he achieves through them. And what, I ask you, am I to do with Catullus' love lyrics, universally and sempiternally relevant, yes, but not radiantly relevant to air pollution? Or with the valetudinarian Mr. Woodhouse or garrulous Miss Bates?

But my chief hesitation over Dean Predmore's proposal--I am sympathetic with it--is a feeling, indeed a conviction, that any humanistic discipline, decently taught, will of its own accord instruct a decent student in "relevancy." In two ways.

First, any good work of art speaks quietly but persistently about itself to any sensitive person, and what it has said to you lies latent in your mind, and in its own way and at an unpredictable moment in time the "message"--an inadequate word--through some sort of alchemy comes back to your consciousness. The mother of the Muses is Memory. One doesn't need, as a running commentary to Thucydides, constant parallels with today's problems, since any intelligent reader of Thucydides will not forget that writer's accounts of how barbarously men can behave in times of general panic, or his cumulative revelation of how fearfully thin is the veneer of civilization that respectably covers men in times of prosperity. Again, it would be at the very least a waste of time to try precisely to relate the pleasurable Wife of Bath to our urban problems. No reader of Lucretius will forget that poet's twisted and tense anxiety over the act of dying, over possible punishment after death, over the role of the gods, or over dreams and nightmares. At the proper time, in some mysterious transformation, these memories will swiftly return to the one-time reader, in full force, and then they will be of help to him. But we cannot say how, or force their application.

Now I turn to the second way in which I believe that a discipline will of its own accord instruct a student in "relevancy." A discipline, in any area, pursued with rigour, will, I believe, train a good student in critical judgment, in respect for accuracy, and in logic and argument. These are par excellence the qualities which we need today in facing the pressing problems which so rightly concern Dean Predmore. My musicological student doesn't need a required course in sociology--I assume that he reads more than scores--but he does need the qualities I just mentioned in order to be a responsibile and useful citizen. So, for my money, the discipline itself doesn't matter, and neither do outside "relevant" courses. What does matter is the sharpness and the toughness of a student's methodological training. The qualities which this sharp training will have bred up in him, along with the sharp sense of taste and the sharp concern for human dignity which a humanistic study will have favoured in him, will help him in coping with sharp current ills a good deal more effectively than will a whole bag full of assorted sociological "facts."

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Finally, mindful of the discussion coming this afternoon, and of the clock, I wish to violate rhetoric by closing with abbreviated views on a hodge-podge of topics.

1. Afro-American Studies: In my opinion, an undergraduate program in this area must precede a graduate program, and so should the foundation of a scholarly Research Center, so that we don't end up with just ideological claptrap. We need not, and we must not.

We must keep pressing for black Ph.D. candidates in the traditional disciplines.

It is my belief that plenty of good, able blacks are being graduated annually from colleges. Our job in the graduate schools is to go out and find them, and perhaps a black recruiter is the best man to find them. Money, much money, is wanted, especially for full support for five years.

As for black professors, I cannot see that it matters whether teachers in Afro-American Studies or in Ancient History be black, white, or lavender. What matters is quality, not pigmentation.

2. A Time-Table for the Ph.D.: This is especially needed in the Humanities, with the date of the preliminary oral examination the critical keystone (at the end of the 2nd or start of the 3rd year). A five-year program seems realistic.

3. Admissions: With me, and perhaps with you, there are too many graduate students in English, Romance Languages, History, and maybe in Government, in terms of faculty and resources; numbers should be watched here.

4. Teaching Experience: Especially desirable in the Humanities, where most will end up teaching. Two years at half time seems ideal. How you help Teaching Assistants in learning how to teach I leave up to the afternoon; there are many ecumenical roads to Rome.

5. Courses in other Departments: Humanistic departments are particularly insular, and credit for such "outside" but related courses needs support.

6. Advising: My own feeling is that in the first and second years this is often hit and miss in the Humanities (which lack the physical intimacy of a laboratory), and should be watched.

7. Departmental Clubs: These are especially to be encouraged in the Humanities, which have no laboratory "home." Further, they can be very helpful in curricular matters. They probably deserve some decanal largesse.

8. Mal-distribution of Financial Aid: I refer to the fact that one student, from various university sources, may receive more money than he actually needs, while another in good academic standing, doesn't have enough. A faculty-student committee to look into sources and distribution of funds may result in some useful proposals.

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At this point you may say to me what Mr. Bennet said to his wife: "I have two small favours to request. First, that you allow me the free use of my understanding on the present occasion; and secondly, of my room."

GRADUATE STUDY IN PRACTITIONER-ORIENTED FIELDS

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The title of this presentation had been listed as "Graduate Study in Professional Fields" and thus at the beginning I must record my view that all fields of graduate study are professional fields in the sense that each is preparation for professional activity.

However, I believe that we should recognize at the outset two types of post-baccalaureate study, one directed toward preparation for a career in research and the finding of new knowledge, and the other toward preparation for a career of practice based on the use of existing knowledge. From this point of view there is a rationale in the organization of the present program in that Deans Page, Landgraf and Elder have spoken primarily about graduate study in preparation for a career in research and university teaching in the sciences and humanities; while I propose to comment on the complementary subject, i.e. graduate study as preparation for professional practice.

The responsibility of the graduate schools, it seems to me, is to prepare outstandingly able persons both for research-oriented careers and for practice-oriented careers. I urge that we recognize these responsibilities on an all-university basis and get on with the job.

Main Characteristics of Research-Oriented and Practice-Oriented Graduate Programs

The contrasting characteristics of the two types of graduate programs are shown in Table I and following are some comments on their relationships. Let us consider two limiting cases, one, the program leading to the Doctor of Philosophy degree as an example of a research-oriented graduate program and, the other, the program leading to the Doctor of Medicine degree as an example of a practice-oriented graduate program.

Let us assume in each case that the duration of the program is of some 4 to 6 post-baccalaureate years, that the quality of the students is very high, and that the degree of achievement required in each of the programs is of the same level although substantively different. These are statements of how the two types of programs are alike.

The differences, as indicated in Table 1, are several. With respect to academic courses, the M.D. program is considerably more structured than is the usual research-oriented Ph.D. program. The professors offering the M.D. program are both full-time professors and also clinical professors who bring to the student knowledge of contemporary practice of the profession. Practitioner preparation includes much more explicitly clinical experience and involvement in an internship than does the research-oriented program.

On the other hand, the breadth of the research-oriented program is significantly wider. The student is asked to develop at least beginning competence in one or two languages other than English for reasons both cultural and technical. The research-oriented program, especially, is concentrated on development of a degree of competence in scholarship and identification of the quality of evidence and in research and the habits of achieving creativity. Finally, in practitioner programs there is much more emphasis placed on "continuing education," so that a practitioner is kept up-to-date by contact with the most recent knowledge in his field. Since the Ph.D. holder is presumably engaged in research and advanced teaching activity, he is already keeping himself up to date and has less need for the continuing education important to the practitioner.

Table 1

MAIN CHARACTERISTICS OF THE TWO LIMITING TYPES OF POST-BACCALAUREATE PROGRAMS

Characteristics	To Find Knowledge (Ph.D.)	To Use Knowledge (M.D.)
Courses	+	++
Foreign Language	+	-
Research & Creativity	++	-
Professors	Full time	Full time & Clinical P.T.
Internship	-	++
Student Support	+	-
Continuing Education	-	+

These same elements differentiate master's programs into the scholarly-oriented M.A. and M.S., and the practice-oriented Master of Business Administration, Master of Social Work, etc. Of course, the master's programs are more modest in requirements and of shorter duration than the doctor's programs.

The general characteristics of good quality practice-oriented and also research-oriented doctor's as well as master's programs have been described recently in booklets adopted in principle by the Council of Graduate Schools in the United States.

Status and Trends in Certain Practice-oriented Graduate Programs

Now let us turn to what appears to me to be the status of certain particular existing or prospective practice-oriented programs. Well established practitioner-preparation programs are illustrated by law, medicine and dentistry, business administration, social work, librarianship, education and others. In many of these, one can identify a "parent disciple," for example, Arts and Sciences for education, Economics for business administration, Art for fine arts, and Sociology for social work.

Looking toward the future, I believe that new practice-oriented programs are urgently needed in a number of fields. Clinical psychology strikes me as being a clear-cut case where we should now recognize separate master's and doctor's degree programs perhaps with names such as Master of Psychology and Doctor of Psychology, for the completion of practice-oriented graduate programs. There appears to be an urgent social need for many more practitioners. The interests of people desiring to practice clinical psychology seems to me to differ greatly from those concerned with the scholarly-oriented and research discipline of psychology.

The field of nursing is one that seems to be evolving rapidly. In older times the training of nurses took place in the hospitals; more recently it has moved to the colleges and universities, with programs leading to such degrees as Bachelor of Nursing and now Master of Nursing. Simultaneously, we observe calls for substantially increasing the numbers of physicians. Where will these physicians come from and how will society be able to afford them under the present medical service arrangements? I believe it to be desirable that nurses with a high degree of competence and achievement, who would be recognized by the degree of Master of Nursing, together with some other appropriate title such as Senior Registered Nurse, should function to provide appropriate medical care much beyond what is now customary for a nurse, and as appropriate under the guidance of a Doctor of Medicine.

The pattern of an intermediate or terminal practitioner-oriented master's degree preliminary to the doctorate that exists widely in schools of public health in this country has not been incorporated into the educational continuum of our medical or dental schools. Some medical schools and a larger number of dental schools offer programs of advanced study leading to a master's degree in a clinical field, but such degrees are awarded to clinical specialists who already hold the M.D. or D.D.S. We now need well-qualified persons, identified by the Master of Nursing or Master of Medicine degree, who will assume increasing responsibility in providing for the enormous needs for medical care in our society today. My understanding is that many women with achievements comparable to a Master of Medicine now function very usefully in the U.S.S.R. giving medical treatment of limited types.

The field of engineering is one in which presently we find common use of degrees such as Master of Science in Chemical Engineering and Doctor of Philosophy, and these are mostly research-oriented, I believe. It seems to me that there is urgent need for graduate programs in engineering which do in fact prepare individuals at both the master's and doctor's levels for actual professional practice. Such programs should be substantially different and obviously distinguishable from the M.S. and Ph.D.

programs, which would be available simultaneously in engineering for persons who are interested in and able to carry on research in these fields. One of the problems in the development of practice-oriented graduate programs in engineering is that of an internship and how this can be achieved without binding the student into the proprietory secrecy that is not infrequently important in professional engineering activity. Perhaps programs leading to the Master of Engineering and the Doctor of Engineering can now be developed by part-time work programs, and experiments of possible major significance are now being developed at several universities.

Finally, it seems to me there is an urgent need for the development of doctoral-level graduate programs providing outstanding preparation for teaching in undergraduate and community colleges.

Status and Trends in Preparation for the Practice of Teaching

Preparation for the practice of teaching in primary and secondary schools is now customarily conducted by study to the bachelor's degree and perhaps the master's degree and often, in schools of education, to the Bachelor of Education and the Master of Education together with certain practice teaching.

On the other hand, the research-oriented programs leading to the Doctor of Philosophy degree are required preparation for university teaching, where the creation of knowledge is a primary part of the professor's credentials for appointment and duties, as well as teaching the students. However, in recent years, preparation for the practice of teaching in undergraduate and community colleges has come to be a question of major importance because of the large expansion that is taking place in the student body of community colleges throughout the United States.

To me it seems clear that the research-oriented M.A., M.S., or Ph.D. graduate programs often are not the best preparation for college teaching and, in any case, the opportunity to conduct research will at best be modest in the undergraduate or community college environment. I believe that we need practice-oriented graduate programs for college teacher preparation containing such elements as the following: (1) emphasis on study and understanding of a broad field of knowledge rather than concentration upon a narrow part of the field; (2) emphasis on development of the capacity and habit of reading, understanding and interpreting the new research results appearing in the scholarly literature of the field, rather than on personal research contributions to, and publications on this new knowledge; (3) some understanding of the history and organization of education in the United States and overseas, and of the psychology of learning and teaching, etc.; (4) a modest individual investigation or summary or correlation of subject matter in the major field, with an assembly of the findings and written presentation as a dissertation, in good style; and (5) an internship which comprises college teaching under the supervision of an experienced senior teacher in the subject field.

Today in the United States only a few institutions seem to offer programs of this type and I believe many more are needed, especially in the primary disciplines of the arts, sciences, humanities, and letters. Most of these needed practice-oriented programs preparing people for college teaching would require two years of graduate study in a particular subject field and lead to a degree such as a Master of College Teaching or else a new type of Master of Arts in Teaching (M.A.T.) degree with emphasis on college teaching.

For some students, further graduate work through the doctor's degree level will be appropriate. To me it seems preferable that this degree be called Doctor of Arts. The University of Washington has just authorized the offering of this degree and I hope other institutions will join us in further development of preparation of highly able college teachers who are interested in the practice of transmission of knowledge rather than its creation.

Evolution of Graduate Programs

All of us are aware of comments about the "rigidity" of departments within our colleges and universities and indeed this is not surprising since the departments or the guilds are in fact the preservers of the sanctity of the disciplines. In Europe, quite differently, a "chair" system functions which provides for much individual initiative by the professor with respect to the subject matter to be considered but, all factors considered, this pattern gives rise to more difficulties in the long view than does our "departmental" system.

The practical fact is that changes do occur rapidly in the academic realm and I respectfully urge each of you to look at the Graduate School Catalog of your own institution as of ten years ago and note how extensively it has changed relative to today's offerings at your institutions. One important role of the Dean of the Graduate School, and perhaps his most important role, is to try to keep departmental programs flexible and evolving with the times and yet maintain quality at the highest level. Many devices are available and all should be used.

The Quantitative Appraisal of Practice-oriented Graduate Programs

For the quantitative appraisal of practice-oriented graduate programs offered in the United States, one might expect to turn to national statistics.

It happens that excellent national statistics are now available for Ph.D.'s by field and institution. However, for practice-oriented doctor's programs, other than the M.D. and D.D.S. and a few others, such information seems to be almost completely lacking. What are now needed, as soon as better program definitions and names are well established, are adequate statistics for practice-oriented doctoral programs such as the Doctor of Business Administration, the Doctor of Social Work, and others.

With respect to master's programs, useful national statistics simply do not exist either for practice-oriented or research-oriented programs. These missing statistics are urgently needed to provide a sound national and regional and even individual institutional basis for the planning which we must do now.

Qualitative Appraisal of Graduate Programs

The quality of a graduate program can ultimately be appraised on the basis of Adam Smith's supply and demand outcome, based upon whether the graduate degree awardees are given jobs and at what salary levels.

In practice-oriented programs one can observe whether graduates are able to pass, successfully, state license examinations. Practitioner's programs are usually accredited by professional organizations approved by the National Commission on Accrediting and about 22 fields are now being accredited, such as law, medicine, engineering, psychology, forestry, speech, pathology, architecture, social work, business administration, pharmacy, etc.

A further way of appraising a program is to count the number of professors, the number of square feet of floor space, the number of books in the library, the number of degree awards, the number of dollars in the budget. All in all, however, this information does not teach us much about the quality.

For a meaningful result, I believe one must turn to peer appraisal. After useful earlier studies, the American Council on Education's report in 1964 by Dr. A. Cartter and associates was a milestone. Now, a new report of the same type is being developed by Drs. Roose and Anderson of A.C.E. and I understand that these results will be available around January 1, 1970. These reports cover the usual disciplines of the humanities and sciences, and a few engineering fields, all leading to the Doctor of Philosophy degree.

In the future, as soon as well-defined practice-oriented programs can be identified at both the master's and doctor's level, I hope that these may also be included in the A.C.E. appraisals, since such peer appraisal seems to be the only sound way available for such analyses to be made.

The Cost of Graduate Education

Both quantitative and qualitative appraisals of graduate programs and, especially, practitioner-oriented graduate programs close to direct service to society, finally relate back to the primary questions of cost. Among these questions are: How much do graduate programs actually cost and what benefits will arise? What is the initial and continuing cost of raising the level of a master's program to a doctor's program? What is the cost, *ab initio*, of inaugurating a new master's program and a new doctor's program? What is the cost of adding a practice-oriented program leading, say, to a Master and Doctor of Music Arts, to an existing research-oriented program leading to the M.A. and Ph.D. in musicology? What would the cost be of adding a School of Social Work if a Department of Sociology of moderate quality already exists? What differences exist in the cost, for example, of a Ph.D. program in English in the first, *vis-à-vis* the third, decile of departments ranked in the A.C.E. studies? What benefits to students, faculty, departments, colleges, community and the nation can be identified in relation to these costs?

As graduate deans we must move rapidly toward procedures to find answers to these questions--and to use these answers for careful planning of the selected development of advanced study at our own colleges and universities. To move toward the answers to some of these questions, the Council of Graduate Schools has established a Committee on the Cost of Graduate Education and it is anticipated that a preliminary Committee report will be made available at the Annual Meeting of the Council of Graduate Schools which will be held in Washington, D. C. in December of 1969.

We must sharpen and refine our objectives and estimates and be sure that in our respective colleges and universities we do with excellence that which we undertake to do at all.

The Future for Practice-oriented Graduate Programs

I believe that practice-oriented graduate programs must and will grow rapidly at both the master's and doctor's level in response to urgent societal needs to apply now-existing knowledge to aid in the solution of man's problems, especially his problems in the fields of social science. I also believe that public monies must and will come to be available soon to assist both academic institutions and students in preparing master's- and doctor's-level practitioners for these fields.

Much greater accountability will be required by the public, and by agencies of the state and national governments, from colleges and universities in relation to graduate programs. Indeed the public is asking with rising insistance questions of increasing sharpness--what is the object of the program? What does it contribute to the social welfare? And how much does it cost? Good answers must be given to these questions in view of the limitations of funds available to educational institutions.

The colleges and universities--and the Council of Graduate Schools can give them much assistance--must clarify and fully explain to the public the objectives and content of their several graduate programs.

The broad development of practice-oriented graduate programs must stand high on our list of imperatives for the immediate future of higher education in the United States.

COMMITMENT AND POWERLESSNESS ON THE AMERICAN CAMPUS: NOTES ON GRADUATE STUDENTS

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It is curiously significant that so little research has been done about graduate students. In the many volumes to appear recently on various aspects of the "crisis" of the American University, little attention is given to the situation of the graduate student. Even at meetings sponsored by the Council of Graduate Schools and other organizations very little time is spent discussing graduate students and student activism in general. The reasons for this neglect are not too difficult to discern. Graduate students have traditionally been taken for granted by academic administrators and others. They have not, until very recently, been demonstrably active in student unrest. They are uniquely dependent on their institutions for, in many cases, financial support, and certainly for their degrees. They have been a kind of silent partner in the process of higher education, despite their importance, in many institutions, to the teaching process.

Graduate students are important for a number of reasons. They are, after all, one of the raisons d'etre of graduate schools! Academic people, on all levels, often forget that students are a key aspect of the academic enterprise. Graduate students are important also because they are no longer silent. At an increasing number of institutions, graduate students are organizing, demanding a larger voice in academic policy making, and demanding better working and studying conditions. The demands which graduate students are making are of importance to graduate schools for a number of reasons. They are often significant suggestions for educational reform and innovation. These demands must also be met if the normal functioning of the institution is to be maintained. It is therefore, of crucial importance to understand the problems, aspirations, and situation of graduate students.

I

Graduate students, almost by definition, are in an ambivalent situation. The sociology of life for a graduate student will indicate something of this difficult situation. Graduate students are adults in the legal sense of the term. Many are, moreover, married and have family responsibilities. Most, an unfortunately high percentage given the composition of the population as a whole, come from affluent family backgrounds. Under more normal circumstances, such individuals would be members of the middle class. Graduate education, however, delays entry into the employment market and, in many cases, means that the graduate student does not have the same links to the economic system and to the responsibilities of the middle class that he might be normally expected to have. Many graduate students live at abnormally low standards of living, and it is likely that a large proportion would fall below the federal government's definition of "poverty."

Graduate students are, of course, not simply poor people. They are temporarily poor. They look at the world through the eyes of the middle class although they do not have either the financial resources or the responsibilities of the middle class. The subculture of graduate students generally supports this kind of enforced, but generally not very serious, asceticism. It is not expected that graduate students will possess the usual accoutrements of the middle classes--at least not now. With this lack of resources, it is often true that graduate students do not have the concomitant responsibilities--no home mortgages, debts on automobiles, etc. They are, in this sense, more free and perhaps more alienated from the American consumer society than their non-student compeers.

Graduate students are also ambivalent about their position in the university. Many have substantial teaching responsibilities and may have more day to day contact with undergraduate students than senior professors. They are, for the most part, highly committed to the university and to academic life (this is particularly true in the traditional letters and sciences departments) but at the same time exploited by the university. It is clear that many large state universities could not function without relatively poorly paid teaching assistants. In addition to receiving fairly low wages for teaching, the teaching assistant often has very little control over what he teaches, the grades given out in his course, and the general conditions of his work. Yet, the teaching assistantship is not just a job--it is sometimes very difficult to quit, since this would have repercussions on the student's academic career. The senior professor (or department) is not just the employer, he is also teacher, judge, and perhaps employment agency.

There are major differences between universities and among academic departments within institutions, yet it is probably possible to generalize about the problem of graduate student employment and other aspects of the situation of graduate students to some degree. Again, substantive research on this and other problems is necessary in order to substantiate and to expand on the generalizations suggested. For example, while humanities departments often employ large numbers of teaching assistants, the natural sciences and to some extent the social sciences make use of research assistants. The position of research assistant, almost universally held by a graduate student, is also an ambivalent one. Again, the student is at the mercy of a senior professor, who is more than a simple employer, but who can and often does decide on the academic future of the person involved. The student is typically working on the research project of a senior professor, and in many instances has little initiative. His work, however brilliant, is often not rewarded. According to the folklore, it is common practice for original work of research assistants to be simply incorporated into books or scholarly publications of the senior professor, often without the acknowledgement of a footnote.

The folklore concerning the exploitation of graduate students is so widespread that it has become part of the reality for many. And it is certainly true that there is more than a grain of truth to many of the stories one hears, even if most are exaggerated. The most blatent stories concern "stealing" of research by senior professors. Somewhat less serious are simple overworking of graduate students by professors or departments. Regardless of the reality of the specific instances cited, students are convinced that they are in a very vulnerable position and that they are likely to be misused by senior academic staff. Reaction to the mystique of exploitation ranges from resignation and the feeling that it is only a temporary situation, as is the case with most graduate students, to active revolt against the individuals and academic system which permit this.

The graduate student is, of course, a student--involved in taking courses and seminars, sitting for examinations, writing research papers, and fulfilling the other obligations of studenthood. Again his position is ambivalent. Under the usual conditions, it is clear that the student is being judged by his professor and his department. Grades count--for fellowships and prizes, as well as for completion of the academic program. Letters of recommendation are important too, and it is often useful to impress particular professors for one reason or another. At the same time, professors often insist that they want to be friendly and low-pressured with their students. There is an effort to separate undergraduate and graduate study by closer and more informal relations with students--although in many large graduate departments this is more myth than reality. But even this familiarity, where it exists, is often difficult for the student, since evaluation is taking place all the time in the American academic system, and the student is pitted against his peers in his department and ultimately in the job market.

As a student, there is often a feeling of powerlessness. In fact, it is here that the ultimate powerlessness enters. For it is upon the judgment of senior faculty that one's career depends. And even where there is confidence in the criteria of judgment and the honesty of the professors involved, it is still with a feeling of great anxiety that the student enters into academic relationships. The judgment of a dissertation, for example, is a most difficult task. Not only do standards of evaluation vary among different professors, but divergent views concerning methodology, or even orientations toward politics, among members of a dissertation committee may make things very difficult for an individual student. Academic politics, even in the most reputable of departments, may enter into the evaluation process. In all of these matters, the individual student has relatively little power or control over his destiny. It is certainly true that in most American universities decisions are made generally on the basis of academic merit, but the vagaries of the decision-making process, and the psychological strain on the student is often substantial. It is not unknown that graduate students have quit academic programs because of disagreements with professors, or have been otherwise discouraged.

The graduate student is not only an employee and a student, he is a member of a subculture. Very little research work has been done on the nature of the graduate student subculture or on its variations according to department or institution. Nevertheless, some generalizations can be made about the subculture of the American graduate student. This subculture is usually academically oriented. Most graduate students, again primarily in the letters and sciences departments, are headed for careers in universities or colleges. They are, therefore, concerned with various aspects of university life, and with the values of the academic world. Although the amount of questioning of traditional academic values is increasing greatly, there is probably still substantial acceptance of most of the aspects of academic life.

The graduate student subculture is, as has been noted, a culture of poverty, but it is a temporary poverty and a poverty that is not, in most cases, particularly difficult to endure. This is true because the standards of the community are accepting of second hand furniture, old cars (or bicycles), and simple meals. The subculture would seem to be a rather pervasive one for many graduate students. A large part of social interaction probably takes place with other graduate students, particularly in the expanding housing complexes for graduate students which now exist in many universities. Even social dissent and non-conformity are likely to have special forms, and to be less flamboyant than among undergraduates.

The subculture, life style, and even the academic and employment situation of the graduate student all indicate that he is something of a marginal man. Without strong local roots and usually without participation in community affairs, without power in his work or study, the graduate student often suffers from a unique kind of anomie. The countervailing force of substantial commitment to his academic career provides a powerful stabilizing element and most graduate students are unwilling to risk their place in the academic community.

II

American graduate students have been notably uninvolved in militant protest activities, although they have played a key role in the recent upsurge of student activism. They have, moreover, helped to set the stage for the current student movement through their participation in an intellectual type of political activism in the past. The lack of militant activism by graduate students has meant that not much attention has been given to them by commentators and others. There is, therefore, practically no research on the role of graduate students in politics. It is, nevertheless, important to consider this matter since it may be of some importance in analyzing the movement as a whole, and certainly is important in understanding graduate students themselves.

Historically, graduate students have provided much of the intellectual sustenance to the student movement and, indeed, to radical social thought in the United States. Graduate students, largely in the social sciences and in history, were crucial in many of the radical intellectual journals which appeared in the post World War II period. They have also been active in the various intellectually-oriented radical sects which survived, although in an attenuated form, the McCarthy period of the 1950's. Journals like New University Thought, founded by graduate students at the University of Chicago, Studies on the Left, from the University of Wisconsin and Root and Branch, from Berkeley, were all important precursors of the new left of the mid-1960's. These journals emerged at the end of the apathetic fifties and raised many of the issues which became important to the New Left. Perhaps most important, they shifted away from the sectarian politics of the earlier period of American radicalism. More recently, Viet Report and its successor, Leviathan, reflect the radical but more intellectually oriented politics of graduate students and young faculty.

Radical graduate students helped to make the work of men like C. Wright Mills popular on American campuses, and provided a market for radical social analyses. Through their work as teaching assistants in courses in the social sciences, as well as through their political writing, radical graduate students involved themselves in popularizing social protest literature on the campuses. In many cases, older graduate students provided a link between the old Left and new trends in campus activism. A number of the founders of Students for A Democratic Society were graduate students who reflected a kind of synthesis between the radical critiques of the old left and newer styles of social protest and analysis. The same phenomenon could be seen on many campuses in the early 1960's. The situation has now changed substantially, and groups like the SDS involve few graduate students as they have moved further to the left in their ideology and tactics.

The role played by graduate students on campuses has been a curious one and reflects the kinds of orientations which were mentioned earlier in this paper. Graduate students, particularly the radical minority among them, are alienated from the social and academic system, and many are well versed in radical theory. Nevertheless, most graduate students are unwilling to risk arrest by police or expulsion from the university for their political activities. Thus, they often play an important behind-the-scenes role in militant protest activity of various kinds. Although it is probably decreasingly true as protest becomes more militant and, in the view of older radicals, adventuristic and irresponsible, graduate students have played a key tactical and ideological role in crises on many campuses. Many of the members of the steering committee of the Free Speech Movement at Berkeley, the first major "revolution" on an American campus, were graduate students, as was the most vocal of its leaders, Mario Savio. Similarly, graduate students were active at Columbia University and in the Harvard strike of 1969. In many of these struggles, graduate students turn at least some of the attention of the activists to university-related issues, since they are very much concerned with their academic environment, usually more so than undergraduate students. It is fairly clear that at present the gulf between graduate students and undergraduates is widening and it is likely that there will be less contact and cooperation in the future. The increasing militancy of the student movement, plus the fact that many graduate students are older--although still under the magical age of thirty--is responsible for this apparent change.

The growth of "departmental insurgencies" in a number of American universities is also important. Graduate students have organized groups, on a departmental basis, to demand academic change and to protect their rights. Some of these groups have concentrated on trade union type demands, while others have served as forums for discussion and have generated proposals for academic reform. These groups combine the political concerns of the "movement" with more traditional university-related concerns of graduate students. Such groups seem to be a growing trend on many campuses and, particularly, in large academic departments where students feel alienated from their professors and from any sense of participation in departmental affairs.

III

One of the problems with much of the analysis of student dissent in the United States is that, while it has tried to analyze various sociological and psychological factors, it has not dealt with the actual demands and orientations of the students themselves. It is particularly important to examine the views and demands of graduate students in order to understand the mood of the campus. It is also true that many of the demands of the politically articulate minority of the graduate student population may have direct relevance for academic reform.

Graduate students are, of course, upset about the issues which are crucial to the rest of the campus community--the war in Vietnam, the race problem, and a general but usually inarticulate dissatisfaction with the direction of American society and culture. Faced with the prospect of being drafted into the armed forces, anti-war activities among graduate students have become more militant. Not a few graduate students have left the United States and have taken teaching jobs in Canada and other countries, much to the detriment of American universities.

Graduate students are also quite concerned about the university, and generally see the academic institution as a more important aspect of society and of their own lives than do most undergraduates. It is significant, for example, that the various "student power" movements which have developed on American campuses have been generally short-lived and that undergraduate students have not been greatly interested in the major problems involved with academic reform. Graduate students, on the other hand, have been the only element of the student population that has successfully organized around local campus issues. The growth of unions of teaching and research assistants at the University of Wisconsin, the University of California at Berkeley, and other institutions is an indication of the effectiveness of this concern. These unions, very significantly, have not limited themselves to "bread and butter" issues but have seriously taken up academic reform.

In part as a response to the alienation which many graduate students feel, the question of student participation in academic policy making has been one of the major issues raised by these unions, and by departmental student organizations at many universiteis. Graduate students strongly feel not only that they should have a voice in the work which many of them do--namely teaching--but that, as mature members of the university community, they should have a voice in more general policy making as well. Graduate students have demanded that there should be student participation in departmental faculty meetings, and in all-university committees of various kinds. Many of the proposals of various graduate student groups are predicated on the assumption that they are full-fledged members of the academic community, and should have at least some of the rights of participants in a community. Student groups have presented workable proposals for joint participation in various committees and other aspects of departmental work. It is highly significant that a large proportion of the agitation has been directed at the academic departmetns, where students feel their fates are decided.

Other reforms have also been proposed, although the students are generally rather unclear about the exact nature of these changes. There is now widespread opposition to many of the more archaic aspects of doctoral programs, particularly in the humanities and social sciences. Students have criticized the nature of language requirements in some institutions, or the composition of Ph.D. examinations in others. It is curious that in several instances where students have prepared proposals for change, the changes would have, if anything, made the academic program more difficult. Graduate students have implicitly attacked their powerlessness through these reform proposals, and also through demands that students have a voice in the hiring of professors. Most of the reform proposals and the criticisms made by graduate students are worthy of at least serious consideration by faculty members and administrators. Some should be implemented. But the challenge to the graduate schools is clear. For the first time in many years students are taking an interest in their own education. Their proposals should be given the most careful analysis by those now holding power in the universities.

IV

Successful graduate students become young faculty members, and although their salaries jump substantially, young faculty members retain many of their values and opinions they held as graduate students. There is also, at many universities, a fairly close relationship between at least some advanced graduate students and some younger faculty members. Thus, it is important to consider this rather neglected group in the academic community in any discussion of graduate students. In a sense, today's younger faculty members are a new breed, at least at the more prestigious universities. Many were involved in activism as students, and others are profoundly critical of many aspects of American higher education. At the same time, most are very much oriented toward the academic profession, again creating something of a conflict between their ideologies and their institutional roles and future aspirations.

It is well known that young faculty members in major universities are not in an enviable position. Their salaries, while better than in years past, are not high, and they are under tremendous pressure to publish while at the same time preparing courses and seminars. Young faculty members are encouraged to be colleagial in their departments, but at the same time do not have much power in academic decision making in many institutions. They are encouraged to take an interest in their students--and indeed are often given heavy teaching loads in large undergraduate courses--but at the same time expected to do research and publish.

It is not surprising that many younger faculty members are critical of various aspects of the university situation and many do not feel themselves truly a part of the institutions in which they teach. This state of affairs, of course, greatly increases the likelihood that young, non-tenured faculty members will play some dissident role on the campus. The fact that a number of younger faculty members, particularly in the social sciences, are radical in their political views, is also important. This means that students, particularly graduate students, will be exposed to radical positions on various issues from their professors. Even when radicals on the faculty do not approve of a particular demonstration or sit-in, they generally take a radical position on many issues, and are consistently presenting radical perspectives to their students in and out of class, and in this sense legitimating a radical viewpoint.

It is also true that younger faculty members, often with radical views, are the only people in the institution able to communicate effectively with the students. They are therefore a crucial element in any crisis situation and, in general, tend to be more aware of trends among the students than their older colleagues. The appearance of groups like the New University Conference, a national organization of graduate students and younger faculty devoted to radical change in society and in the university, and the newly formed Radical Scientists groups on many campuses, indicate that younger faculty members are organizing and will be a potent new voice on the campus. Again, the potential for constructive change from these groups is substantial since they are in touch with currents among students, and some NUC and other groups have formulated proposals for change.

V

The need for research on higher education in general is substantial. This is particularly true for graduate students and for the whole area of academic reform. It is perhaps significant that one of the main stimuli for change in the American university is the student community. Students have certainly been unable to formulate comprehensive proposals for reform, but they have forced the universities to take a long and serious look at themselves. The academic community must not only conduct research on graduate students, but must additionally involve the student community in a common search for reform and innovation. To date, very little cooperative effort has been done, and it is often the case that various elements of the university--students, professors, and administrators--have talked past each other. Senior members of the academic community must begin to listen to students and must begin to take them seriously.

THE POSITION OF THE CONTEMPORARY GRADUATE STUDENT WITHIN THE UNIVERSITY

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This morning I would like to share with you some observations and concerns which may be present in varying degrees within graduate students on your given campus. Having recently completed six years of graduate study at San Jose State College and the University of California, Berkeley, I have come to the conclusion that throughout the acquisition of certain skills and depth in the conceptualization and formulation of ideas, basically I remain the same person I was prior to entering graduate training.

This should not be at all surprising for many of you as Deans of Graduate Divisions. In a very real sense, studies have indicated for undergraduates that "the something" that was supposed to happen within the four year time never materialized. The student remained basically the same. One can only conjecture how much of an impact and influence such variables as faculty, curriculum, type of institution, college interaction and feelings of the time have on the contemporary graduate student today.

It is my contention that the contemporary graduate student of today is in such a marginal position as to affect him as would a vacuum--a marginality which thus isolates him to such an extent that it prevents the exchange (touch--talk--interact) which would effect change.

First, the contemporary graduate student during his residency requirements may be defined as being physically present on the given campus. Later, however, one finds many variations of this presence depending on schools, departments, and divisions as to where the graduate student may finish. His dissertation topic, research funds, and other variables dictate where he will be and for how long. In any event, he is a more transient being than is the undergraduate student.

In today's university, a graduate student working toward an advanced degree finds his options quite extensive; so extensive for some that it becomes a system of confusion in selection. No longer does one work for an M.A., M.S., or Ph.D. Rather, today's graduate student finds that throughout the many graduate schools of the nation over 150 types of master's degrees are offered and 70 or more doctoral degrees. In a sense, then, it becomes not a question of deciding to pursue graduate study but, more relevantly, a question of what kind of degree one desires and where one wants to get it.

There are many variables in deciding both the type of degree and the particular institution. Many of my colleagues as graduate students felt the public image of an institution played a deciding factor in the final decision. This public image consisted in academic ranking, the faculty and the university outreach in dealing with many of the contemporary problems of today. In essence, this idea might be stated as "something was happening" at this given university.

Once, however, many of my colleagues and I began our academic pursuit, we noticed that there was little correlation between the private image and the public image of our given university according to our expectations before entry. Some may call this institutional lag, or even the so-called "generation gap." Regardless of how one defines this experience and feeling, the fact is that it is apparent among many graduate students.

Some have claimed that many graduate students are attracted to a certain university because of the faculty--either one unique member or the collective image of the group. Berkeley in many ways has been defined in this manner by those who are not graduate students. Yet many have found that some faculty members, usually those most noted for their research, are seldom present to motivate, to teach, to inspire.

The student who wants to become part of the outgrowth of the university finds himself factored out. The graduate student often finds himself alienated from that which might have attracted him to a given campus or school in the first place.

The contemporary graduate student faces various degrees of concerns that affect him as a person, and in his execution of his conflicting roles as a student. Realistically, graduate students are in themselves a deeply heterogeneous grouping with special interests. Those who are just out of undergraduate school are preoccupied with an immediate concern, the draft. Others are concerned with the minimum amount of the G. I. Bill necessary to be able to continue one's education. Others are concerned with the people concept of a given university and the frustrations and anxieties of many within a total campus setting. Others display only indifference toward anything that may extend their time within the graduate school and completion of their degree.

Nearly 50% of the G. I. graduate students are married by their first year and close to 80% by completion, a system whereby the student must virtually rely on his wife or Government to enable him to continue in his marginal position. He is neither man nor boy, breadwinner nor welfare recipient, but a graduate student who faces continuous hurdles throughout his residency until the completion of the dissertation. The sorting out process is a never-ending process in graduate education until the last signature and defense of the thesis is complete. This, every graduate student knows and learns to live with or leaves. In a sense, one develops or perhaps I should say is forced to maintain a storage place for surplus anxiety and tension during the graduate years.

During the duration, a graduate student is oftentimes faced with financial problems, faculty turnover and a wealth of problems. For some the role of father, husband, breadwinner, potential scholar, researcher, reader, teaching assistant, and self never seem to define one's self but remain in a continuous state of flux and flow.

In relating to the university and those outside its abstract walls, the graduate student again finds himself in a multitude of research tasks directly dependent on his major area of study. Some may be researching stratification within South American tribal systems, others delving into numerous scientific projects such as the areas of solid state physics or organic chemistry. In any event, we are talking about special and specialized circumstances and more often than not, specific areas of research relevant to the individual investigator and his immediately concerned faculty but irrelevant to the graduate student as some kind of amorphous collective unit within the university.

In many instances a student's research topic, design, and methodology may be completely prescribed for him either through an individual staff member or Federal grant or whole department or school requirements. In other cases an individual's research may be compiled with other students' research and published under the name of a faculty member or a department or school within the university. One may wonder why the student tolerates such a rigid system of voluntary indentureship. The same question may have been asked when you who are presently graduate deans began your graduate studies in the years past. Some may view it as the apprenticeship for entry into the various closed systems of scholars, others as a challenge to the student's intelligence, wit and creativity (cunning?), some to maintain the ascribed status of past generations of professionals, scientists--the learned.

Recent studies have indicated within the past two decades that slightly over 50% of those acquiring the Ph.D. came from working class families and more often with the father having no greater than a 12th grade education. Thus, the motive of upward mobility for acquired status was significant then and probably is today for many graduate students throughout the nation. Significantly, then, half of the Ph.D. attainers are moving into a new system in relation to their heritage. To "make it" these persons may adopt the values of the existing bureaucracy and thus influence its retention as a system and style of apprenticeship.

To say that a graduate student has certain key outlets to influence what happens to him within his campus setting, borders in many cases on the realm of mythology. In some departments and divisions today, one finds polarization between those marginal faculty and the marginal students in attempting to meet even to discuss curriculum changes, department prerequisites and other key areas that will affect a large segment of those pursuing advanced degrees.

Where the contemporary student of today finds he has virtually limited voice as an individual within a division, department, school and the total university, he also finds that collectively, the graduate student has no significant voice in student government or total campus policy. Thus he is alienated both from the academic world of staff and administration and also from the student body.

Some areas within the university have fostered defined structures and even content to repress the graduate student or at least keep his marginal status within the confines of divisions and departments. One must determine the total involvement and impact of all the graduate students in their respective divisions and departments before positive indicators of change are attributed to a given school and thus the total university. In other words, certain divisions and departments have developed their own communication systems--subcommittees, whole committees, reform groups, faculty-student encounter groups and others. These have been designed on paper to monitor graduate opinion within these divisions and departments, hopefully with the ultimate goal of valid change. The validity of this objective has never been measured to indicate that these systems do indeed reflect graduate student opinion. Rather, these communications seem to serve only as a reinforcer to those who design these methods and thus as a perpetuation of non-communication or at least mis-communication between faculty, administration and graduate student. The ultimate goal of change seems to be a mere nebulous intention which is lost somewhere among all the chatter.

And so, the degree of marginality increases for the graduate student; he finds himself neither accepted by his professors in many instances as being a very relevant person (with noted exceptions), nor by the community outside the academic ghetto as a responsible adult. Rather, he is seen as one who is only trying to avoid responsibility in failing to become a productive member of a defined segment of society. In other cases, he may be viewed as avoiding the draft or avoiding the realities of life. Regardless, there are still other patterns that directly affect not only the self-image but the integrity of the total system.

In the final analysis, course work, written comprehensives, oral comprehensives, thesis design, methodology, foreign language, thesis defense and research become the major and in many cases the only common interest for the contemporary graduate student.

There are many things that happen externally to the contemporary graduate student, some that will permanently scar either physically or psychologically. The student strikes, National Guard on campus, tear gas in the classrooms and in the community wherein the university resides; the university becomes a haven for reaction rather than positive action to alter the many and complex social ills facing our society today.

The graduate student represents a heterogeneous population, each individual bringing a uniqueness which cannot be categorically assigned a role or mold. He is marginal first to the outside (real) world. Further, he is marginal within the university institution from the faculty and academic staff and from the administration. These marginalities would in a sense give him a collective identity were it not for the ultimate marginality--that between the graduate students themselves, a condition resulting from the unlimited nature of specialization.

There is, then, no collective being with collective traits--the graduate student--beyond this assigned linguistic symbol--graduate student. This designation is given to individuals who are in marginal and transient status and who have unmeasured perseverance.

THE FUTURE OF GRADUATE EDUCATION

President Gustave O. Arlt
Council of Graduate Schools in the United States

If my abbreviated and unconventional analysis of "Graduate Education Today" presented difficulties, you may be sure that a prognostication will be far more precarious. Any forecast, no matter how modest, of the future of graduate education in the coming decades must perforce be preceded by a number of stipulations and assumptions regarding various factors over which the educational community has little or no control. Like every other social institution, its existence is linked with the society that produced it and it prospers or declines, it lives or dies with that society. It must therefore be assumed, first of all, that society, probably somewhat modified, will continue to exist substantially as we know it--an assumption which, in the light of our times, is surely not a certainty. It must be assumed that the world will not be visited by a cataclysm of global dimensions that would destroy society and all its institutions--again an assumption that is far from an assurance. It must further be assumed that we will gradually learn to deal effectively with social and racial injustice, with urban blight, with crime, with pollution of the environment, and the many other ills that beset us. This further assumption may be quite unrealistic, indeed it may be Utopian. I grant that it is idealistic, but I submit that if we cannot maintain a vestige of idealism in this sea of trouble, we have no right to talk about a future at all, in fact we have no real justification even for doing what we are doing, laboring for the present as though we believed in a future. And that brings me to my final and summarizing assumption, namely that the world of the 1970's, 80's, and 90's will be a great deal better or at least a little better than the world of today. If you grant me this modest hope, it will serve as the slightly rose-tinted background against which I may forecast some thoughts about graduate education.

One other factor may have considerable bearing upon the aspect of future graduate education, but this is one for which the educational community itself bears responsibility and over which it can exercise control if it will develop more wisdom and foresight and courage than it has shown in recent months. I am speaking, of course, of the turmoil within our institutions. No one can doubt that there is grave danger that higher education may be radically altered--and not for the better--perhaps partially destroyed, if administrators, faculty, and students do not act together in wisdom, goodwill, and harmony now. As long ago as the Fall of 1964, after the first explosion at Berkeley, Sidney Hook predicted that "American higher education would never be the same again, that a turning point had been reached in the pattern of its development." But he, like many others of us, did not anticipate the rapidity of the change, its erratic direction, the escalation of lawlessness, and least of all the incredible irresponsibility of many faculty members. We have learned over the years to live with the fuzzy thinking of the self-styled liberals, but it is harder to condone the muddleheadedness of their elders. The divided loyalty of the faculty shares the blame with panicky, administrative ineptitude for the capitulation to the "non-negotiable demands" of lawless students.

Inestimable, perhaps irreparable damage has already been done in many institutions. Radical lowering of admission standards without providing adequate remedial instruction, abolition of grades without devising other assessments of achievement, dropping of required courses that the rioters do not like have reduced some colleges to the status of disorganized high schools. The hasty establishment of ill-conceived, badly planned autonomous black studies programs and of segregated residence halls and student lounges makes mockery of the Civil Rights Act and has already brought blunt warnings by the U. S. Attorney-General. In their anxiety to staff new departments of ethnic or black studies, black social sciences, and--God help us--even black mathematics, many colleges have employed persons of dubious qualifications and competence. This, in turn, has caused an alarming and increasing exodus from these colleges of faculty who refuse to remain in a deteriorating environment, thus further contributing to the decay.

It is a well-known American characteristic to over-react to critical situations. We are so afraid of doing too little too late that we sometimes do too much too soon. But I know that in the end sound judgment generally prevails and that mistakes are eventually corrected. Of course the correction always costs more than the avoidance of the mistake in the first place--and I am thinking not only of money. Nevertheless, I am optimistically confident that the vast majority of our universities and colleges will emerge from their temporary aberration scathed and a little charred around the edges but basically sound. The ones that I had in mind in the diatribe of the preceding paragraph will take longer to recover. They will be saddled indefinitely with unqualified students, unviable courses, and incompetent faculties. Gresham's Law operates inexorably in the academy. I do not hesitate to predict that some of them will lose their accreditation and many will lose federal support. They will award inferior baccalaureates to a generation or more of students who will be inadmissable to graduate schools. These will be the new breed of disadvantaged students--disadvantaged through misguided philanthropy--and they will present us with a new problem in the not-too-distant future.

As I now turn to my assigned topic, "The Future of Graduate Education," I find that all I have said so far was to establish my confidence that there will be years ahead, that there will be universities and teachers and students. But since I am not so sure that by 1980 there will be graduate education in the restricted sense in which we use the word today, I will now substitute the expression "advanced education" in order to obliterate the present boundary lines between undergraduate, graduate, post-doctoral, and adult or continuing education. And I will also take the liberty of taking a look at the perspectives in the years past since, as a historian, I have the feeling that we can't tell where we are going until we know where we have been.

Universities from time immemorial have been conservative in the most literal sense of the word. They were established to conserve the religions, the laws, the medical lore, the philosophy, and the wisdom of the civilizations that created them and to pass these values on to the next generation of neophytes unchanged in content and form as they have been received by their teachers from their own teachers. Universities were not expected to innovate; on the contrary, innovation would have been heresy. Whether in the Confucian, the Moslem, or the Judeo-Christian world, the university was the conservator of tradition, of all accepted, approved, sanctioned tradition, as the Latin name Universitas clearly implies. I add parenthetically, our universities in the last year or two have been branded as "part of the Establishment." In the ancient world the university was the Establishment.

The common purpose of universities in all civilized societies was not to provide higher education for a majority of the population but rather to educate a very small, very select minority for the practice of what we still call the learned professions today--theology, law, and medicine. The education that was dispensed to this intellectual elite had two very distinct characteristics: it was authoritarian and it was finite. It was authoritarian because it was founded on sacrosanct doctrine of theology, philosophy, law, or medicine. It was finite because it was the distillate of the total knowledge of a static society which produced no new knowledge. When the student had completed his five or more years and was certified by his teacher as a "Master," he could confidently go out to practice his profession with the assurance that he had learned literally everything there was to know and that nothing more would be added in his lifetime.

This comfortable condition persisted in the Western World until the middle of the seventeeth century. It ended with the revolt of reason against authoritarian dogma that opened the way for the beginnings of experimental science. In a remarkably short time, considering the preceding two thousand years of inertia, the static Western civilization and with it its higher education became violently dynamic. The two most important forces in this dynamism were the spread of universal primary education and the spectacular advance of science and technology.

The first of these forces, particularly in the United States, completely changed the concept and character of higher education. It was no longer regarded as a training school for a select few for a limited number of learned professions but became a natural extension of primary and secondary education for all those who had the ability to profit by it and to pay for it. And so, in the 19th century, the bachelor's degree became first a social status symbol and soon the ticket of admission to any number of lucrative vocations. In the 20th century it was not the enhanced social status of degree holders but their enhanced earning capacity that drew young men by the hundreds of thousands and soon by the millions into college. It goes without saying but I say it nevertheless that the educational needs of these students radically altered, not to say revolutionized, the curriculum of the 19th century college. The corollary to "education for all" is that "not all profit by the same education." Here are the beginnings of specialization and fractionation.

The second important force, the spectacular advance of science and technology, reinforced and accelerated the changes in advanced education. There was a time when it was literally possible for an individual to encompass the total complex of human knowledge, to know all there was to know. I suppose that Leonardo da Vinci knew everything there was to know in Europe in the year 1500. But I doubt that even the greatest intellects of the late 17th century, Descartes, Leibniz, Newton, mastered more than a large fraction of potential knowledge. And a hundred years later geniuses like Franklin, Jefferson, and Goethe may still have been able to acquire a fair portion of the knowledge of their time. But since their time, the proliferation of new knowledge has so accelerated that no one, no matter how talented and how diligent, can cope with more than an infinitesimal fraction of it.

Higher education has attempted to solve the problem of new knowledge by adding two or four or more years to the undergraduate curriculum and to use the added time span for intense specialization. The rationale for this device that we call graduate education is that since the student cannot hope to master more than a tiny sliver of potential knowledge he must examine that sliver in such depth and with such thoroughness as to qualify him to compete in his chosen profession in later life. Simultaneously, because even these added two or four or more years have become insufficient, we have begun to push specialization far down into the undergraduate college. And finally we seem to have discovered in recent years that a Ph.D. degree is not sufficient proof of specialization in some fields and that we need one or two or more postdoctoral years to produce the superspecialist.

Now as we begin to look at where we are going, I should like to question some of the things we have done and are doing. First of all, is intense specialization the best or even adequate preparation for the world in which we live? Every man has many lives--as a specialist--and I am even willing to put this first--as a husband, a father, a member of a community, of a political party, and of a nation. Do five, seven, or nine years of specialization prepare him for any of his other lives? I don't wish to labor this point. All of us in our official capacities know brilliant specialists who are nothing else. One symptom of the intellectual and human isolation of specialists is their increasing inability to communicate with anyone outside their fractionated specialty. Perhaps our system of advanced education is not intended to produce useful, well-balanced citizens; at any rate it is not designed to do so. But we certainly need such people as much as we need superspecialists.

My second criticism of our manner of dealing with the vast increment of new knowledge has to do with our failure to recognize its nature. We pretend that new knowledge is merely increasing in content at an accelerated rate and we fail to take into account that its content is actually changing at an even faster pace. There is hardly a field of learning whose most fundamental concepts have not changed radically in the past twenty years and are not now continuing to change from year to year. If this is a fact--and I doubt that anyone would deny it--then no amount of extension of the Lehrjahre as Goethe called them, the learning years, will solve the problem of advanced education.

What has happened is that higher education has never completely broken with the concept of the ancient universities that knowledge is finite. You will recall that earlier in this discussion we saw that the medieval universities lived and worked in a static society with the comforting assumption that, given enough time and effort, you could learn everything there was to know. You could therefore draw a neat line under the educational process and assure the newly hatched "Master" that he was now ready to practice his profession and there would never be anything more to learn in his lifetime. Fundamentally we still operate with the now fallacious assumption that we can draw an arbitrary line between education and practice of profession. The only concession that we have made to the dynamism of our world is that we draw that line four years or eight years or more later in the life of the individual. Never mind that much that he learned in graduate school and even more that he learned in undergraduate college is as obsolete today as the Malthusian Principle. He will probably never know it.

In a commencement address about ten years ago, Clark Kerr predicted that by the year 2000 the bachelor's and master's degrees would be discarded, the Ph.D. would be the first degree in course to be awarded, and there would be more postdoctoral than predoctoral students in the universities. His audience thought that he was being facetious and perhaps he was making the prediction with tongue in cheek. But as we look at our situation ten years later the idea does not seem too farfetched. In our efforts to train the specialists that we need we have even now reached the point of diminishing returns in the education of the citizens that we also need. And please note that I have just now carefully used the words "training" and "education" not as synonyms but as antonyms. If the present trend continues, specialization will soon begin in the freshman year, indeed, in some disciplines we have already reached that point. And we will certainly continue to add years upon years at the top of the system, probably in the form of more postdoctoral study. We will produce super-super-specialists and human beings that are out of tune with their environment, misfits in a world that they do not understand.

Moreover, we will have a system of advanced education that will become increasingly more uneconomical. We have already added a good many years of financial and intellectual dependence to the lives of our young people. Our affluent society can perhaps afford the cost of additional years of advanced education for the many thousands, soon perhaps millions, who want it, although there are already pretty clear indications that the goose is getting tired of laying golden eggs. But can society afford psychologically to keep these people out of productive participation until the age of thirty to thirty-five? With every year that passes they become more fixed in their state of dependence and less flexible as potential members of an independent, productive society. And when they finally begin their professional careers, their active life has been shortened by five to ten years and their professional competence begins to decline years before retirement age because they acquire no new knowledge to replace what has become obsolete.

I think these are some of the factors that President Kerr had in mind when he made his surprising prediction ten years ago. I also believe that the obsoleteness of our system of higher education will become more and more obvious in the coming years--its topheaviness on an insubstantial base, its wastefulness of human and financial resources, and its inadequate provision of truly professional continuing education for mature and professionally employed adults. I therefore foresee the gradual evolution of an integrated system of advanced education, beginning at the post-Junior College level and continuing through life. I believe that education for citizenship and professional training will go on side by side from the very beginning and through all stages. Approximately the first four years will consist of full-time study, fully subsidized by federal and state support, and the attainment of this level will be marked either by an intermediate degree or, more likely, by a certificate of limited professional competence. Please note this point is approximately that of the present master's degree and the student will be about 24 or 25 years old. At this stage he will be encouraged to seek part-time employment in his profession and to continue his education and his professional training on a part-time basis. It may now take him five more years to complete his Ph.D. degree but with the advantage that his continuing education makes him progressively more competent in his profession and the professional practice reinforces his education. He will be a productive member of society and, as such, will be expected to bear at least a part of the cost of his continuing education.

But this is not the end. The university will provide further professional training for as long as the individual wishes it to keep his knowledge up-to-date and continuing education for citizenship to interpret a constantly changing world to him. Please understand that I am not speaking about the popular adult education programs that many universities now offer, useful as they may be. I am speaking about solid postdoctoral work on the highest professional level. And I am speaking of as intimate an integration of training and professional practice as it is possible to achieve, an arrangement in which even the distinction between teacher and learner will all but disappear, an open-ended continuum of advanced education extending through the productive years of the participants into their years of retirement.

In every era the universities have tried to be responsive to the needs of their times, sometimes more, sometimes less successfully. For many centuries they served as the conservators of the static knowledge of a static society. In the 19th century they were the dispensers of liberal and vocational education to a dynamic and vocationally oriented middle class. And in the 20th century they became the prime producers of new knowledge and the training schools for the specialists who produced more new knowledge. Now as they face the 21st century in an increasingly complex society, they must again radically alter their character. To him who will read the signs the direction of these changes is becoming more distinct.

The Junior College movement and its unbounded growth clearly indicates the insistent need for post-high school education. I foresee that the Junior College will eventually become a part of basic secondary education and that the great majority of youth--in some states, all--will be in school until age twenty. This development itself will fundamentally change everything that follows. It is for this reason that I have tried with not complete consistency to use the term "advanced" education for the ensuing process. The bachelor's degree will, after a long and bitter rear-guard action, disappear. Indeed, if we are perfectly honest and realistic, we must admit that it is already an anachronism. A hundred years ago it was a social status symbol. Fifty years ago it was a union card for membership in many vocations. Today it is the admission ticket to graduate school and only a partial admission ticket at that. Now, if the graduate school becomes an integral part of an endless continuum of advanced education, what purpose will the baccalaureate serve? The master's degree or some other intermediate degree will probably survive and will mark the end of the full-time stage of advanced education. From that point on the rule will be part-time study and part-time employment; full-time study will be the rare exception. The harbinger of this change, too, is already visible. If you will check the national enrollment figures for the past ten years, you will find that, in spite of all efforts to encourage full-time study and in spite of the denial of federal and other aid to part-time students, the percentage of part-time enrollments rises year by year. And finally, the continuing trend toward a shorter working week, longer vacations, and increased leisure in all vocations and professions without reduction of income seems to predict that it will soon be possible to be fully productive in a profession and still have more than ample time to devote to advanced education. Indeed, it will not only be possible, but for increasing numbers of the population it will become a social, psychological, and intellectual necessity to devote themselves to life-long learning.

AFTERNOON GROUP DISCUSSIONS

Discussion Leaders:

H. Frederic Bohnenblust, Dean of Graduate Studies, California Institute of Technology

Robert S. Kinsman, Associate Dean of the Graduate Division, University of California, Los Angeles

Horace W. Magoun, Dean of the Graduate Division, University of California, Los Angeles

Charles G. Mayo, Dean of the Graduate School, University of Southern California

Michael J. Pelczar, Jr., Vice President for Graduate Studies and Research, University of Maryland

Alvin H. Proctor, Academic Vice President, Kansas State College of Pittsburg

Duane C. Spriestersbach, Dean of the Graduate School, University of Iowa

George P. Springer, Vice President for Research and Dean of the Graduate School, University of New Mexico

Philip M. Rice, Dean, Claremont Graduate School and University Center

Allan Tucker, Vice Chancellor for Academic Affairs, State University System of Florida

SUMMARY OF GROUP DISCUSSIONS

On four afternoons during the Workshop, small-group discussions provided opportunity for in-depth discussion of practical and conceptual issues of graduate education and its administration. Each group involved eight participants and two discussion leaders, thus permitting optimal individual participation. Five groups met concurrently each afternoon and rotation of the participants among the groups on different days permitted their maximal association with one another.

In advance of the Workshop, a list of suggested discussion topics, prepared by the Planning Committee, was sent to participants for their additions and priorities of interest. These topics, supplemented by those generated at the morning presentations, provided something of a common agenda for each group.

Following these sessions the discussion of each group was summated by the leaders. A representative summation began, "As with most of the afternoon groups, naturally, we didn't cover all of the subjects introduced in the morning session and managed to get off onto a good many digressive paths as well."

A synthesis of these summations may now be presented under the following headings of major common interest and concern.

The Position of the Graduate School in the University

In the administrative organization of most universities in the United States, the paradoxical position of the graduate school can best be understood in the light of the historical development of higher education in this country. From colonial times, the early institutions were established in the pattern of the English undergraduate college, with a direct administrative channel between the president and the dean of the college; a pattern that later became replicated as needed when professional schools were added. In the latter nineteenth century, the German model of graduate education for research was grafted onto the top of this structure, as a graduate school with a dean, but the existing channels of administration between the president and the deans of the established schools and colleges remained unchanged. Characteristically, the dean of the graduate school did not become plugged into this system as a line officer, but, rather, busied himself with the admission, support and general academic progress of graduate students, in chief relation to the chairmen of the departments of other schools or colleges, in the specialized graduate programs of which these students were enrolled.

Appropriately, therefore, discussion of the position of the graduate school in the university revolved around the role of the graduate dean and ranged over a spectrum from "Who needs the graduate dean?"; through his intermediate role as the Defender of the Graduate Faith, leading advanced study and research into greener pastures--without authority, budget or faculty--either through the influence of his charismatic personality and intellectual distinction or simply by "patience and low cunning"; to the extreme of making him a vice chancellor for graduate studies and, perhaps, director of research as well. It was generally agreed that no single arrangement could properly serve as an ideal model for all institutions. Each pattern of organization must of necessity be worked out in terms of the need and stage of development of a given institution. One general principle emerged, however; the degree of administrative centralization is inversely related to the size of the graduate school and the length of time it has been functioning.

Among variations, one institution with a relatively new graduate program reported having no graduate dean, his functions being performed by a vice chancellor within the office of the vice president for academic affairs. The question "What advantages are there to having a graduate school at all?" was raised by a newly appointed dean of an urban university in which the graduate school had in effect been abolished and its functions reduced to the minimum of handling comprehensive examinations. The more general features of graduate administration lay primarily in the office of the president, the provost of the college, and the graduate dean, in consultation with a forty-member academic senate. Admissions were handled through departments, degree criteria were set by the senate, and reports on various programs were provided by associate graduate deans within each of the separate schools, divisions or departments.

Several questions were raised concerning such a decentralized and skeletal organization: How was quality control insured? How was a desirable continuity of policy- and decision-making provided? How was a sufficiently wide base of coherence promoted among the faculty, to insure support within as well as to weather fads from without the university? A minority opinion held that there may be no particular advantage to a graduate school as such, especially when, and if, an academic body of a certain size provides the necessary support for developing programs and a sufficient continuity of management, despite turnover in administrative and other personnel. The majority felt that older and well-established graduate schools require less centralization in administration, since the academic departments have themselves come to be strongly oriented toward excellence at the graduate level. Contrariwise, a stronger centralized administration is called for when graduate programs are in the process of becoming established. In the opposite direction, instances were cited when decentralized administration resulted in the eventual deterioration of quality.

Consideration was given to the advantage and disadvantage of giving the graduate dean the title of Vice Chancellor or Vice President. An underlying concern here was to enable the dean to participate in the budget-making process, and to make his own presentation of requests to those responsible for budgetary decisions. Additionally, such a title gives graduate studies more visibility and status among the faculty. It was pointed out that a number of institutions have a central administrative officer for research and several felt that the graduate dean should also be appointed director of research.

With respect to the graduate school's control of budgets, variations ranged from limited responsibility for the extramural support of graduate students, to budgets covering the entire cost of graduate programs, including faculty salaries. Participants reported a wide variety of practices concerning the role of the graduate dean in faculty recruitment and promotion. Depending upon the size of the institution, graduate deans are involved in interviewing all faculty or only senior faculty, and some are involved only in promotion and tenure situations. It was generally agreed that the chairmanship of academic departments was also very much the concern of the graduate dean.

There was unanimous agreement that a substantive contingency budget was of enormous importance to the graduate dean's office, for he should be in a position to respond quickly to various emergency situations requiring limited amounts of money. Means should be developed to increase the level of contingency funds under his control. Funds for a contingency budget were reported to originate most frequently from the cost of educational allowances associated with federal agency fellowships. In some instances the entire amount of $2,500 is allocated to the dean's budget; in others the fraction remaining after fees and overhead charges are deducted. This money is used in a variety of ways: for interim faculty salaries, for innovations in teaching, for additional student fellowships, and for the support of summer research, dissertation expenses, and student and faculty travel.

Comments were made concerning the difficult and time-consuming relationships of the graduate dean with his institutional colleagues, the chairmen of departments and the deans of other colleges and schools. It was the judgment of the group that no shortcuts in this process are feasible. On some campuses, a regular Council of Deans meets once a month. Nevertheless, most of the graduate dean's contacts with other administrative officers are informal and necessary. With respect to the relationships of the graduate dean with the faculty senate, two patterns were discussed as polar models: A California pattern, characterized by strong campus-wide groups and faculty senate committees; and a Michigan pattern, where most relations are decentralized to the faculties of individual colleges and schools.

Graduate Faculty

Institutional variations in faculty eligibility for graduate instruction ranged from inclusion of all faculty with professorial status, through the additional requirement of an interim period of teaching or research and publication for junior staff, to heirarchical arrangements that differentiate faculty authorized to direct doctoral dissertations or master's theses; others permitted to serve on but not chair student committees; and still others without eligibility for any participation in graduate education. At the many institutions which subscribe to the recommendation of the Council of Graduate Schools, that there should not be a separately designated graduate faculty, it was recognized that newly appointed assistant professors customarily begin their supervision of graduate students with master's degree candidates and gradually become involved with doctoral students. Characteristically, in most fields, doctoral committees tend to be chaired predominantly by the tenured faculty. Moreover, in many programs, a relatively small proportion of the tenured faculty tend to chair most doctoral committees.

Discussion then focused on the problem of graduate students who are handicapped and their progress delayed by lack of responsibility of graduate faculty toward them, such as professors who are on frequent or extended leaves, too busy with their own research, or who show little regard for their graduate students. Recommendations for resolving the plight of a student when his major professor transfers to another institution included: the student's transfer to the new institution along with his professor; cooperative arrangements between the two institutions, with the professor continuing as adviser; or the student's transfer to other professors within the home department.

The question was asked, "What mechanism can be devised for getting someone off the graduate faculty?" In institutions with differentiated graduate faculty, a limited period of such designation was suggested, with evaluation built into the review for continuing approval. In other institutions, in which master's or doctoral committees are appointed by the graduate dean, upon recommendation of the department chairman, the latter can at least prevent inappropriate faculty from serving by never recommending them. This identical issue was recently raised at another meeting, which recommended "the development of a mechanism for eliminating faculty that clearly had become obstacles to academic progress," to which a jocular comment from the floor added, "in addition to the current practice of appointing them to administrative positions!"

Programs of Graduate Study

Discussion of program development emphasized interdisciplinary programs of graduate study that draw faculty from and so interrelate several of the traditional departments. Such programs provide an antidote to the tendency toward excessive specialization and the fragmentation of major fields into isolated sub-specialties that is so characteristic of much graduate education today. Moreover, as these interdisciplinary programs mature, they frequently become reconstituted as new departments and thus may be considered as agents of educational change, which enable universities to respond to the development of new fields of knowledge by incorporating new programs of graduate study relating directly to them. Some recommended the encouragement and support of interdisciplinary programs, therefore, as the best hope for the evolution of the academic organism. The value of having such programs develop out of faculty interest, rather than by administrative design, was illustrated by the recent establishment, at a new campus, of a common School of Social Sciences that was to award all doctorates in this field. Since then, traditional Ph.D. programs in political science and in psychology have already become differentiated.

Moving now from the development of new programs to a consideration of those already existing, there was general advocacy for the periodic review and evaluation of established programs of graduate study, though comments pointed to the growing multiplicity of such reviews, by some state Councils of Higher Education, by regional accrediting agencies and, in some fields, by national specialty societies. It was recommended that a systematic schedule, in which all programs were evaluated periodically, was preferable to review only when serious conditions in individual programs precipitated such attention. At a number of institutions, graduate programs are approved for specific intervals of time, e.g., 5 years, in the terminal year of which their review and evaluation provides the basis for continuation. It was generally agreed that the graduate dean had major responsibilities to encourage and participate in such reviews and his office should assist departments in the compilation of available statistical information.

It was thought preferable to have such reviews either in the hands of a graduate council or a committee of visiting consultants, or some combination of the two, so as to provide both for specialist insight and objective consideration of the program. Among available external consultants, the Workshop was glad to learn that the Council of Graduate Schools had provided very useful visiting committees for some of the institutions represented. Additionally, some institutions arrange for parallel review by a committee of the department's graduate students, appointed by officers of the Graduate Student Organization.

Such reviews of ongoing graduate programs serve to recognize and commend achievement when it exists and, contrariwise, when weakness is identified, to make recommendations for and encourage improvement. Should conditions become so serious as to raise questions of a program's termination, however, it is highly desirable to develop formal procedures for appropriate academic and administrative consideration, with full opportunity for hearings and due process, before final action is taken.

Graduate Admissions

Institutional variations in handling graduate admissions ranged from a section in the registrar's office, which screened graduate applications and forwarded them to departments for decision; through a section of the graduate division which processed and evaluated applications and admitted on the basis of departmental recommendations; to operations completely centralized and controlled within the graduate division. Most advocated a distinctive Graduate Admissions Office to provide a sense of identification in the selection of graduate students. Some felt, however, that in a small university the registrar could serve as a graduate admissions officer, if he would leave the choice of admissions to the graduate departments and merely provide the services of informing the applicant, setting appointments for health examinations, handling registration, etc. Similarly, it was felt by some that a Director of Undergraduate Admissions could also handle graduate applications, provided he too was responsive to departmental recommendations and without authority to block them. Others felt, however, that the important distinction was not so much between undergraduate and graduate identity, as between discriminative choice and discretionary control on the one hand, and the provision of a service on the other.

In the absence of available weighting factors for undergraduate grades awarded at different institutions or, at a given institution, in different disciplines, discussion turned to the use of the Advanced Tests of the Graduate Record Examination for assessing the academic ability of applicants against national norms. Discussion then moved to means of gaining additional information beyond the undergraduate grade-point average, Graduate Record Examination scores and letters of recommendation. One institution asks for a biographical statement; another requires the applicant to state his objectives in graduate study, which has proven useful; a third has found a carefully prepared "essay-questionnaire" of value. Much interest was shown in Klein's development of an "Independent Activities Questionnaire" designed to assess aptitude for creative and productive achievement and so provide indication of success in graduate study. This questionnaire is currently being tested at a number of institutions and may ultimately become incorporated into the Aptitude Test of the Graduate Record Examination.

Discussion then turned to the admission process as a means of controlling program size and student mix. Those institutions having quota systems have developed procedures for review of departmental statements of the desired size of their programs, based on student-faculty ratios, stage of development of programs, and institutional plans and priorities. All agreed that program size is a significant issue that deserved continuing scrutiny by the graduate dean, both at the stage of admission and in allocating funds for student support as well. Others reported that quotas were becoming imposed on admission by forces outside the institution, out of a concern for the high cost of graduate education or the desire to maintain a certain mix or balance of students. In some instances, these quotas appeared to have been established arbitrarily and without reference to the needs of an institutional or a state's educational master plan.

Attention was directed to the wide prevalence of student migration from baccalaureate to graduate institutions, which frequently crossed state lines; as well as to the characteristic mobility from small baccalaureate institutions to large prestigious universities. Such migration often creates a talent drain from states or regions lacking prestigious graduate schools to those possessing them. Moreover, this migration needs to be related to a second, later migration, from graduate institution to first post-graduate employment, which again often crosses state or regional lines. At this stage, another negative balance often develops that is disadvantageous to some parts of the country. It was mentioned that, when a large Midwestern public university discovered that 60% of its graduate students were from out-of-state and, upon graduation, only 20% of its doctoral graduates remained in the state, the legislature was unhappy and discussed steps to limit the number of out-of-state graduate students offered graduate admission.

Discussion of limitations upon the admission of non-residents was then extended to quotas upon the graduate admission of foreign applicants. Over the years, the growth in numbers of foreign students pursuing graduate study in this country has been encouraged both in the direction of establishing cordial foreign relations, as well as to provide U. S. students with highly educational, peer-group relations with students from other parts of the world. Recent Congressional passage of the International Education Act has, in a sense, established higher education as an instrument of this country's foreign policy. So far, however, Congress has not appropriated funds for educational costs or foreign student support to implement this policy at the federal level. In the meantime, U. S. universities continue to support the graduate education of foreign students but when, as appears, approximately half of these students remain in this country upon graduation, such a talent-drain from other countries sometimes leads to strain rather than cordiality in international relations.

The Teaching Assistantship and New Teaching Degrees

Considerable discussion was devoted to the teaching assistantship, which presently serves a variety of functions in American higher education. Institutionally, it is an important and economical means of providing the supplementary manpower needed for teaching the large numbers of undergraduate students enrolled in lower division courses. For the teaching assistant, it is one of the three main sources of graduate student support, along with research assistantships and fellowship-traineeships. Moreover, at many institutions, it is the chief source of intramural support, which makes it of particular importance for students in the social sciences and humanities, for whom extramural support is limited. With respect to graduate education itself, however, the role of the teaching assistantship is ambiguous. In a century-long devotion to its German heritage of graduate study as preparation for research, and despite the fact that a large proportion of its graduates pursue academic careers in which undergraduate teaching is a major obligation, American graduate education has yet to incorporate any formal, substantive preparation for teaching into the spectrum of its master's and doctoral degree programs in letters and sciences.

At some institutions, individual departments may require a period of service as a teaching assistant either of all graduate students, of all doctoral students, or of all doctoral students planning academic careers. Some institutions, among them American University, Drake, Iowa, Michigan and Utah, were reported to have developed what promised to be highly effective institutional programs for improving the educational features of the teaching assistantship. At the University of California, the Coordinating Committee for Graduate Affairs has recently recommended the provision of graduate students with an educational experience in college teaching in all programs leading to the C. Phil. or doctoral degrees. This recommendation is proposed to be implemented by educational preparation in courses and seminars, by supported individual experience in a teaching internship, by the enrollment and supervision of such teaching interns, and by evaluation of their achievement posted on their transcripts.

At many institutions, however, the low stipend of the teaching assistant's appointment does not appear to be compensated for adequately by active planning of his program, by effective supervision of his teaching, or by recognition of his status as a young colleague. All agreed that this situation, which some call "exploitation," is leading to discontent and unionization. It was predicted that graduate schools would undoubtedly be faced with important problems in this area in the future. Many concluded that far too little consideration has been given to the role of the teaching assistant, either by the Graduate Dean, or by the deans of the colleges or schools in the undergraduate curricula of which the assistants are actually teaching. It was recommended that the Council of Graduate Schools study this whole subject and Dean Proctor, its chairman, reported that the Executive Committee of the Council of Graduate Schools, which had been meeting concurrently with the Workshop, had already authorized a special committee to undertake a study of the teaching assistantship and recommend standards and guidelines.

Discussion was then devoted to the recently established degrees, Candidate in Philosophy (C. Phil.) and the Doctor of Arts, and to the extent to which recipients of these degrees had obtained teaching appointments in educational institutions. Since the C. Phil. degree is awarded upon advancement to candidacy for the Ph.D., it should not be expected to provide any better preparation for teaching than the traditional Ph.D. itself. The program leading to the Doctor of Arts, by contrast, is oriented toward preparation for teaching and it is often called the teaching doctorate. One participant reported that his institution had appointed a Doctor of Arts graduate, from Carnegie-Mellon, who was proving to be a highly desirable member of the faculty; another reported a similar experience with a Doctor of Social Science from Syracuse University. Several commented on the worthy objective of raising the prestige of these new degrees. It was agreed that one factor that was likely to contribute to their future status was the growing insistence at many junior colleges, colleges and universities on better quality teaching.

Minority Programs in Graduate Education

A number of participants reported experience at their institutions with recruitment, admission, student support, special tutorial activities, and relationships with the Black Student Union and United Mexican-American Students. Discussion was devoted also to the growing development of ethnic studies courses and curricula at many institutions. Because of the scarcity of qualified minority faculty everywhere, regional collaboration between institutions was felt to be mandatory and examples of "circuit-riding" minority faculty were cited. The question of ethnic study programs at the graduate level was explored from the point of view of the availability of library and other resources for study and research. In contrast to the relative wealth of such material for Afro-American, American Indian and, in some fields, Asian-American studies, sources for Mexican-American studies were reported to be extremely scarce. Reference was made to the joint efforts of the Western Association of Graduate Schools and the Western Interstate Commission for Higher Education to gather current information and report on minority enrollment, support, faculty, programs of study, and library and other research resources, at graduate schools in the Western states, where the variety of minority groups probably exceeds that of any other area of the country. Such information may be expected to foster inter-institutional cooperation in ethnic programs and studies, analogous to the cooperative programs in more traditional fields that have developed among the CIC institutions in the Midwest.

Graduate Student Organizations

Most participants reported that their institutions either have or were starting graduate student organizations and a number of examples were elaborated. Claremont has an active Council of Graduate Students, with an Executive Committee whose members are elected by the students in each department, but principle interest is on the part of students in political science and philosophy. Iowa has a Graduate Student Senate, made up of representatives from each department, which is provided with an office and telephone. The Graduate Dean and his staff maintain communication by periodic meetings with the Executive Committee at lunch. The Graduate Students Association at UCLA, established a number of years ago by Dean Emeritus Gustave O. Arlt, has an office and staff in the Student Union and is involved in a variety of activities that range from publication of a

Graduate Students Journal, to supporting, out of increased fees, a program of GSA fellowships for doctoral students from minority backgrounds. The Associate Graduate Dean for Student Affairs maintains communication by attending meetings of the GSA Council of departmental representatives.

It was agreed that the formation of graduate student organizations should be encouraged at institutions where they do not already exist and they should not be allowed to emerge, through default by the dean or faculty, as "confrontation" organizations. The participants wished also to encourage participation by graduate students in university decision-making. Most reported a trend toward graduate student representation on standing committees both of the faculty senate and individual departments. Commonly, for example, representatives of the graduate student organization are invited to participate in meetings of the graduate council and its subcommittees. Several participants expressed satisfaction with this development on the grounds that such student involvement provided desirable educational preparation for committee service in the students' later academic careers.

Follow-up of Graduate Degree Recipients

Animated discussion was devoted to the question of whether university graduates today face a buyer's or a seller's market. National statistics notwithstanding, evidence was presented that at least in certain fields recent doctoral graduates are having problems in obtaining satisfactory employment. These factors, it was recognized, bear some relationship to the whole question of how much time a graduate student should ideally take to obtain his degree, as well as how long a period of financial aid should be provided by institutions or Federal Agencies supporting graduate education. Moreover, it was suggested that in the social sciences and in the humanities some of the longer time required for completion of the doctorate might be spent off campus, in the "real" world.

A number of participants wondered how successful graduates were proving to be, both in their first employment after graduateion and further down the road. One participant stated that, to his knowledge, graduate education was basically no different today from what he remembered it to be in the 1930's. Others suggested that an approach to this issue might well be made, not from the direction of the graduate schools themselves, but from the direction of society at large and individual employers specifically. This discussion led naturally to the whole question of relating job experience after graduation to educational preparation before graduation.

The question was asked, "What national efforts are being made to follow up on graduates?" The National Research Council studies of their cummulative Doctoral Record File provide information on the employment of doctoral graduates, but only for the initial year. Moreover, it was pointed out, doctoral graduates constitute only a fourth or a fifth of master's degree graduates, for whom no national survey is operative. Mention was made of several techniques that graduate deans individually might employ to follow up their own graduates, and utilize simultaneously for evaluation of departmental performance as seen by recent graduates. A representative of the National Research Council suggested that a national survey of master's and other intermediate degree graduates might be attempted by this organization. The group agreed that institutional collaboration in such an enterprise was feasible, provided the questionnaire was modest in length and available for completion by the graduates themselves, rather than by graduate school staff.

It was recognized that better follow-up was important to all graduate schools for a variety of reasons. Principally, state legislatures are becoming more and more concerned by the increasing costs of publicly-supported graduate education and by the number of master's and doctoral degree graduates who subsequently leave the state. Studies indicate that California, New York, and a few other states are heavy gainers in this process, whereas the Midwest and other parts of the country are losers. It was pointed out that private institutions traditionally keep track of their alumni for financial reasons, but graduate deans generally should accumulate information about the subsequent career achievement of their graduates in a more systematic way than that which prevails in many institutions, where only the senior professors in academic departments may be acquainted with what has become of their graduates.

A National Policy for Graduate Education

As a fitting conclusion to these discussions, one group wound up its meeting "by agreeing that a conference should be held for the purpose of developing A National Policy for Graduate Education." It was pointed out that two recent reports of the National Science Board have contributed importantly to such a development, and that a Conference on Predoctoral Education, to be held in August 1969, under the auspices of the National Academy of Sciences, will explore the feasibility of a wide-ranging study of graduate education in this country, with emphasis upon measures to make it more responsive to anticipated national needs in the future.

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Gustave O. Arlt is President of the Council of Graduate Schools in the United States and has held this position since 1962.

A native of Lock Haven, Pennsylvania, he attended Elmhurst College and then the University of Chicago where he obtained his baccalaureate, master's and Doctor of Philosophy degrees.

Following earlier appointments at DePauw University and Indiana University, Dr. Arlt joined UCLA as Professor of German in 1935. His academic field is German Literature and he has published extensively in this field, modern languages, and history.

Appointed Associate Dean of the Graduate Division at UCLA from 1950-58, and Dean, 1959-62, Dr. Arlt played a major role in the development and administration of graduate education at that institution. In 1962 he was appointed first president of the newly-founded Council of Graduate Schools in the United Snates which, under his leadership, has since become the major national organization advancing all features of graduate education in this country.

H. Frederic Bohnenblust is Professor of Mathematics and Dean of Graduate Studies at the California Institute of Technology.

He was born in Neuchatel, Switzerland and came to the United States in 1928 as a graduate student at Princeton University. After he obtained his Ph.D. degree, he stayed as a member of the staff at Princeton, then moved to Indiana University and finally, in 1946, to the California Institute of Technology. He has held the position of Dean of Graduate Studies since 1956.

During the war he served as a member of the National Defense Council. As a research mathematician, he is particularly interested in

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He is currently President of the Association of Graduate Schools in the Association of American Universities.

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A native San Franciscan, he received his undergraduate education and Ph.D. at the University of California, Berkeley, in Microbiology. He has published extensively in this field and has served actively in programs of the World Health Organization, including a year in Spain as a Guggenheim Fellow on a WHO project on immunity to Brucella infection. He is presently a member of various Study Sections of the National Institutes of Health, and consultant to the Surgeons General of the U. S. Army and Navy.

Among other recognitions of his achievements, Dean Elberg has been awarded an honorary Doctor of Humane Letters from Hebrew Union College, and is a recent Past-President of the Association of Graduate Schools.

John Petersen Elder is Professor of Greek and Latin and Dean of the Graduate School of Arts and Sciences at Harvard University, having held this position since 1955.

He received his undergraduate education at Williams College and his A.M. and Ph.D. in Classical Philology at Harvard University. He has published studies on various Latin poets, the Virgilian commentator Servius, and on ancient writing and textual criticism. He has served as Acting Director of the Center for Hellenic Studies in Washington, D. C. and continues as Vice Chairman of the Administrative Committee of the Center. He is currently Director of the Center for Middle Eastern Studies at Harvard, and Director of the American Council of Learned Societies.

Dean Elder has served also as Chief of the Graduate Fellowship Section, NDEA Title IV, at the U. S. Office of Education; and is a Past-President of the Association of Graduate Schools.

Charles E. Falk is Planning Director of the National Science Foundation and has held this position since 1966.

He was born in Hamm, Germany, received his baccalaureate and master's degree at New York University, and his Doctor of Science in physics at the Carnegie Institute of Technology.

Dr. Falk then joined the research staff of the Brookhaven National Laboratory in neutron and charged particle nuclear physics, became Administrative Scientist for the newly formed Alternating Gradient Synchrotron Project, responsible for the design and construction of the 30-billionelectron volt particle accelerator and, in rapid succession, was appointed Scientific Assistant to the Director, Assistant Director, and Associate Director of the Brookhaven Laboratory.

In his present position, at the National Science Foundation, Dr. Falk is responsible for overseeing the operations of the Office of Planning and Policy Studies, the Office of Economic and Manpower Studies, and the Office of Data Systems. In general, the activities he directs include: long range internal NSF planning, the compilation and analyses of data pertaining to science and technology, and the development of national policies for the support of research and science education.

John K. Folger is currently Executive Director of the Tennessee Higher Education Commission and was, until recently, Dean of the Graduate School of Florida State University.

He is a native Georgian and took his undergraduate work at West Georgia, pursued graduate study at Emory University, and received his Doctor of Philosophy degree from the University of North Carolina.

Dr. Folger's academic area is Sociology with strong interest in Statistics. He has been chief, Technical Services Division, Human Resources Research Institute, U. S. Air Force. He has been associated with the Southern Regional Education Board in the research programs of this organization. He has also been Director, Commission on Human Resources and Advanced Education, National Academy of Science. A report of its appraisal of the development of talent in the United States has recently been published.

Dr. Folger's advice and counsel are sought by many societies and commissions, such as the Census Bureau, Selective Service, and the Executive Committee of the Council of Graduate Schools.

Robert J. Henle, S. J. has recently completed his twenty-sixth year at Saint Louis University and has just become the forty-fifth President of Georgetown University.

He was born in Muscatine, Iowa, received his undergraduate and theological degrees from Saint Louis University, and his doctorate from the University of Toronto. He specialized in classics and philosophy and taught philosophy for many years. He has over a hundred publications on a wide range of topics--classics, education, philosophy, religion, and politics.

Father Henle has been increasingly involved in administration, as an undergraduate dean, as Graduate Dean, and as Academic Vice President at Saint Louis. He has held leadership positions in a large number of local, national and international organizations, and has been particularly active in developing policy for graduate education and for Catholic higher education generally. Having been a member of the founding committee of the Council of Graduate Schools in the United States, representing the Midwest Graduate Deans, he served as Secretary of its first Executive Committee.

Father Henle has received many honors, among them an honorary degree from Loyola University of Chicago and Saint Louis University's highest recognition, the Fleur-de-Lis.

Frank M. Koen is Associate Professor of Psychology at the University of Michigan and a Research Associate of its Center for Research on Learning and Teaching. He received his undergraduate education at Mercer University and his M.A. and Ph.D. at Vanderbilt in psychology.

Dr. Koen has previously studied the application of principles of programmed instruction to teaching films in mechanical engineering and to courses in art and architecture. He is presently directing a research and development training program for Teaching Assistants at the University of Michigan.

In addition, he is a Research Associate in the Center for Research on Language and Language Behavior, where his activities have increasingly centered upon evaluating significant, but difficult to define, educational objectives.

Robert S. Kinsman is Professor of English and Associate Dean of the Graduate Division at the University of California, Los Angeles, with special responsibility for Graduate Admissions.

He received his undergraduate education at Dartmouth College and his M.A. and Doctor of Philosophy degree from Yale University, in English Literature.

Dr. Kinsman is active in many professional societies and activities. He is a member of the State of California Graduate Fellowship Committee, and the Regional Selection Committee for Woodrow Wilson and the Martin Luther King, Jr. National Fellowships, and Editor of Experiment and Innovation: New Directions in Education at the University of California.

He has published widely in scholarly journals and has contributed papers relating to graduate student analyses for AACRAO and for national and regional graduate school organizations.

John L. Landgraf is Graduate Dean at New York University.

He received his undergraduate education at Pomona College and his Ph.D. at Columbia, in anthropology. His academic field is cultural anthropology and human geography and his studies and publications in this area have ranged from New Mexico to Borneo.

Dr. Landgraf is past chairman of the Committee on Testing of the Association of Graduate Schools, as well as of the Graduate Record Examination Board of the Educational Testing Service. He serves also on the Council of Graduate Schools Advisory Committee to the Institute of International Education, on the National Liaison Committee on Foreign Student Admission, and on Panels of the New York State Regents and the National Science Foundation and the American Council of Learned Societies.

Horace W. Magoun is Professor of Anatomy and Dean of the Graduate Division, UCLA, having held the latter position since 1962.

He was born in Philadelphia, received his undergraduate education at Rhode Island State College, his master's degree from Syracuse, and his

Ph.D. from Northwestern University Medical School. His research interests have been in the neurosciences, and he has participated in the activities of the Institute of Neurology at Northwestern and, more recently, those of the Brain Research Institute at UCLA.

Dr. Magoun has served on a number of committees of the National Institutes of Health and other federal agencies, as well as on committees of the National Academy of Sciences--National Research Council. He is a Delegate of the U. S. - Japan Cooperative Science Program.

Charles G. Mayo is Dean of the Graduate School at the University of Southern California, a position he has held since February 1968. During the academic year 1968-69, he also served as Interim Dean of the College of Letters, Arts, and Sciences.

A political scientist, Dr. Mayo received his A.B. from Reed College and his A.M. and Ph.D. degrees from the University of Southern California. Prior to his joining the faculty of the University of Southern California in 1966, Dr. Mayo was a member of the faculty at San Francisco State College. He has co-authored two books, one on political parties and the other on the study of political science, and has published in professional journals. He has also served as Chairman of the Department of Political Science at the University of Southern California.

Joseph L. McCarthy is Professor of Chemical Engineering and has served as Dean of the Graduate School at the University of Washington since 1959.

A native of Spokane, Washington, Dean McCarthy received his undergraduate degree in Chemical Engineering from the University of Washington, his master's degree from the University of Idaho, and his Doctor of Philosophy degree in Organic Chemistry from McGill University. He has published many research papers in his field.

Dean McCarthy has served as President of the Association of Graduate Schools in the Association of American Universities and as Chairman of the Council of Graduate Schools in the United States. He is presently serving on Advisory Committees to the U. S. Office of Education, the National Science Foundation, the American Council on Education and the Naval Postgraduate School at Monterey, California.

Robert E. McDermott is Professor of Forestry, Associate Dean of the Graduate School, and Acting Associate Director of the Center for the Study of Higher Education at the Pennsylvania State University.

He was born in Maywood, Illinois, received his undergraduate education and his M.S. degree at Iowa State University and his Ph.D. in botany at the University of Missouri, is now Head of the Department of Forest Management and Wildlife at Penn State, and has published widely in this field.

Dr. McDermott was a key figure in organizing the first Summer Workshop for Graduate Deans held last July at Pennsylvania State University and, as a member of the current Planning Committee, has contributed importantly from his experience to the design of the present Workshop.

John F. Morse is Director of the Commission on Federal Relations of the American Council on Education.

He is a Yale man and has received an honorary degree from Saint Michael's College. He has served as Director of Admissions and later as Vice-President of the Rensselaer Polytechnic Institute.

Dr. Morse has played an important role in formulating educational assistance programs both in New York State and for the federal government. In 1962 he directed, for the House of Representatives, the first definitive study of the federal government's involvement in education.

He has published in many professional, academic, and popular journals and is the author and co-author of a number of books in the subjects of college admissions, student aids, and the functions of the federal government in higher education.

Milton E. Muelder is Vice President for Research Development and Dean of the School for Advanced Graduate Studies at Michigan State University and has held these positions since 1959. This past year he has held the additional post of Acting Dean of International Programs.

Dr. Muelder was born in Boody, Illinois, received his undergraduate education at Knox College, and then began graduate study at the University of Freiburg, Germany. Subsequently he took both the master's and the Ph.D. degrees at the University of Michigan, majoring in European history with a cognate in German Literature. Under a special program sponsored by the U. S. Navy he took an additional master's degree in International Administration. His teaching experience covers German Language and Literature at LaCrosse State Teachers College and European History at Michigan State University. Following extended World War II and post-World War II assignment abroad, he returned as Head of the Department of Political Science and Public Administration teaching both Public Administration and International Administration. From 1951 to 1959 he was Dean of the College of Science and Arts at Michigan State University.

His military experience involved first the coordination of plans of military government control of German administration for which he was awarded the Legion of Merit. Subsequently he became Deputy Director of Educational and Cultural Relations Division, General Clay's headquarters, Berlin. More recently, he has served as member of the Michigan State Civil Service Commission, the State Fulbright Committee, and numerous other assignments of the several governors of Michigan.

John Boyd Page came to Iowa State University in 1960 as Professor of Soils and Dean of the Graduate College and, in 1961, was additionally appointed Vice President for Research.

A native of Payson, Utah, he received the B.S. degree from Brigham Young University, the M.A. from the University of Missouri, and the Ph.D. from Ohio State University.

He served as Instructor in Soil Chemistry at the University of California 1939-1943, then became successively Assistant Professor, Associate Professor and Professor of Soil Physics at Ohio State University in the years 1943-1950. In 1950 he joined the A & M College of Texas as Professor of Soil Physics, in 1956 became Dean of the Graduate School and, in 1957, was made Dean of the College as well.

Dr. Page has served as Chairman of the Council of Graduate Schools in 1967, as a member of GREB, as a consultant to the U. S. Office of Education, and a member of the Executive Committee of the National Association of State Universities and Land-Grant Colleges. He is currently Chairman of the Council of Research Administrators in the Land Grant Association, a member of the Board of Directors of the Argonne Universities Association and of the Council on Federal Relations of AAU.

Michael J. Pelczar, Jr. is Vice President for Graduate Studies and Research at the University of Maryland and has held this position since its inception in 1966.

Born in Baltimore, Dr. Pelczar received his undergraduate and M.S. degrees from the University of Maryland, and his Ph.D. in Bacteriology and Biochemistry from the State University of Iowa in 1941. As Professor of Microbiology and former Major in the Army Medical Service Corps, Dr. Pelczar is a member of numerous honorary and professional societies. In 1964, he served as Chairman of the World Health Organizations' special meeting on Neisseria, held in Geneva, Switzerland.

A distinguished educator and administrator, Dr. Pelczar holds a wide variety of national and international committee positions and is Chairman-elect, Executive Committee of the Council for Research Policy and Administration, National Association of State Universities and Land-Grant Colleges. He serves on the Governor's Advisory Panel for Science and Technology; the Board of Directors, Oak Ridge Associated Universities, Inc.; and the Committee on Policies and Plans, Council of Graduate Schools in the United States.

Alvin H. Proctor is currently Chairman of the Council of Graduate Schools in the United States. He was elected to the Executive Committee of the Council in 1965 and became Chairman-elect in December 1967.

Dr. Proctor did his undergraduate work at Kansas State College and received his Ph.D. degree from the University of Wisconsin. He was a Ford Faculty Fellow at Harvard University in 1954-55, doing postdoctoral study in International Relations.

His professional career has included teaching in the public schools, junior college, and senior college. His academic disciplines are history and government, which he has taught in New Mexico, Kansas and Wisconsin. He was Chairman of the History and Social Science Department at Kansas State College from 1950-58; Graduate Dean from 1958-66; Executive Vice-President from 1966-68; and Academic Vice-President at the College since June 1968.

He was President of the Midwest Conference on Graduate Study and Research in 1968-69, is a Consultant in Graduate Affairs to the U. S. Office of Education, and is a member of various academic organizations such as the Association for the Advancement of Science, the American Academy of Political and Social Science, etc.

Philip M. Rice is Professor of History, Academic Dean, Dean of Faculty, and Dean of the Graduate School at Claremont Graduate School and University Center, having held these appointments since 1964.

Born in Los Angeles, he received his undergraduate education at Pomona College and his M.A. and Ph.D. in History at the University of North Carolina. Prior to returning to Southern California, he served as Chairman of the Faculty at North Carolina State University and as Head and Director of Graduate Studies, Department of History, Political Science and Philosophy, Kansas State University.

Among many other activities, Dean Rice is currently a Special Consultant to both the California Coordinating Council for Higher Education and the California State Scholarship and Loan Commission; a member of the Committee on the Preparation of College Teachers of the Council of Graduate Schools and the Review Committee for Ph.D. Program in History of the American Historical Association; and President-elect of the Western Association of Graduate Schools.

David J. Sanchez, Jr. a native San Franciscan, attended the University of San Francisco, received his B.A. and M.A. from San Jose State College, and his Ph.D. from the University of California, Berkeley, this past June, 1969.

He has taught in the San Francisco public school system and has been a lecturer in Sociology at the University of San Francisco, where he served as the faculty adviser to the Mexican-American Student Confederation. He has served also with the U.S. Naval Reserve and has been a consultant to various agencies, institutions and projects dealing with problems of the inner city, especially those affecting the Spanish surname population.

While at the University of California, Berkeley, he was a Regents Fellow and served on the Graduate Advisory Committee and the University of California Community Committee. He is on the Board of Directors of the Northern California Constitutional Rights Foundation, the Board of Catholic Social Service of San Francisco, and is presently the youngest member ever to serve on the San Francisco Board of Education and the first Latin American.

Duane C. Spriestersbach (Ph.D. Iowa, 1948) is a speech pathologist. He was appointed to the faculty of Speech Pathology and Audiology at the University of Iowa in 1948. In 1957 he was also appointed as a Professor of Speech Pathology in the Department of Otolaryngology and Maxillofacial Surgery at the University. He has served as principal investigator of several interdisciplinary research projects involving surgeons, dentists, speech pathologists, psychologists and engineers seeking to improve the physical management of individuals with cleft lip and palate. He was appointed Dean of the Graduate College in 1965 and Vice President for Research in 1966.

Dr. Spriestersbach is a Fellow and Past-President of the American Speech and Hearing Association (1966), a member of the Board of Directors of the American Board of Examiners in Speech Pathology and Audiology, a member of the Joint Committee on Dentistry and Speech Pathology-Audiology, Past-President (1961-62) of the American Cleft Palate Association, a member of the Dental Training Committee of the National Institute of Dental Research, and a Standing Consultant to the Division of Training Programs, Bureau of the Education for the Handicapped of the U. S. Office of Education.

Since become Dean of the Graduate College at the University of Iowa, Dr. Spriestersbach has been involved in streamlining and computerizing the administrative procedures of the College, modifications of the language requirements, the preparation of doctoral students for the role of a college or university teacher, the development of interdisciplinary programs of graduate study, the study of admission standards and the place of the GRE in the admission process, and the development of techniques for effective leadership in a unified graduate college with 95 graduate programs.

George P. Springer is Associate Professor of Anthropology, Dean of the Graduate School, and Vice President for Research and the University of New Mexico, having held these positions since 1965.

Born in Brno, Czechoslovakia, he received his undergraduate degree in Musicology, and his M.A. and Ph.D. in Linguistics at Harvard University. Subsequently, in addition to teaching and research in Slavic studies at Yale, he was Assistant Dean of the Graduate School and Director of the Summer Foreign Students Institutes.

While at Yale, Dr. Springer was a member of the Board of Directors of the International Student Center and the Yale-in-China Program. More recently, he has served as consultant to the Overseas Education Service, and to grant and fellowship programs of the Danforth Foundation.

Currently, Dr. Springer is a member of the Executive Committee of the Council of Graduate Schools and President of the Western Association of Graduate Schools.

Allan Tucker received his bachelor's and master's degrees at the University of Toronto and a Ph.D. at the University of Michigan.

As Vice Chancellor for Academic Affairs, he is the principal consultant on academic policy to the Chancellor of the State University System of Florida. He is responsible for supervising the coordination of academic planning, academic development, and academic administration in the seven existing state universities of the University System. In addition, he supervises the statewide coordination of the continuing education programs of these universities. He collaborates with the Vice Chancellor for Administrative Affairs in developing guidelines for preparing academic budgets for individual universities, as well as the University System. In carrying out his responsibilities, he works closely with university presidents, vice presidents, deans, and faculty of the state universities in Florida. He has been deeply involved in the planning of the two new state universities most recently opened in Florida and provided assistance to the presidents of these two new institutions in the implementation of these plans. He is currently directing the academic planning of two new state institutions of higher learning which will be opened in 1972.

Before coming to Florida in 1964, Dr. Tucker served on the faculty of Michigan State University. During his last five years at Michigan State he was engaged in the administration of graduate studies and research. He has directed his own research projects financed by Federal grants and has actively participated in national projects sponsored by the National Science Foundation and the U. S. Office of Education.

He has also been involved in the planning and development of an undergraduate university on Okinawa as consultant to the President of the University of the Ryukyus. He held this position for four years as a member of the Michigan State University Advisory Group to the university on Okinawa.

His academic discipline is biology and he has taught and conducted research in this field prior to accepting assignments in administration. He has published in his own academic discipline as well as in the field of administration.

Preston Valien is Acting Assistant Commissioner of Education, U. S. Office of Education.

He was born in Beaumont, Texas, received his undergraduate education at Prairie View State College, and his master's and Ph.D. degrees from the University of Wisconsin in Sociology. He has been Professor of Sociology as well as Chairman of the Department of Social Sciences and Director of Research at Fisk University and, more recently, Professor of Sociology at Brooklyn College. His academic interests include studies of population, migration and race relations.

Dr. Valien has been associated also with the National Opinion Research Center, the Federal Civil Service Commission, the Tennessee Valley Authority and the New York State Health Department. For two years he was cultural attaché at the American Embassy, Lagos, Nigeria.

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WORKSHOP STAFF

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	Mrs. Bernice Holman, Secretary, School of Public Health, UCLA
	Mr. Keith Walton, Department of Geography Representative to Graduate Students Association, UCLA
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